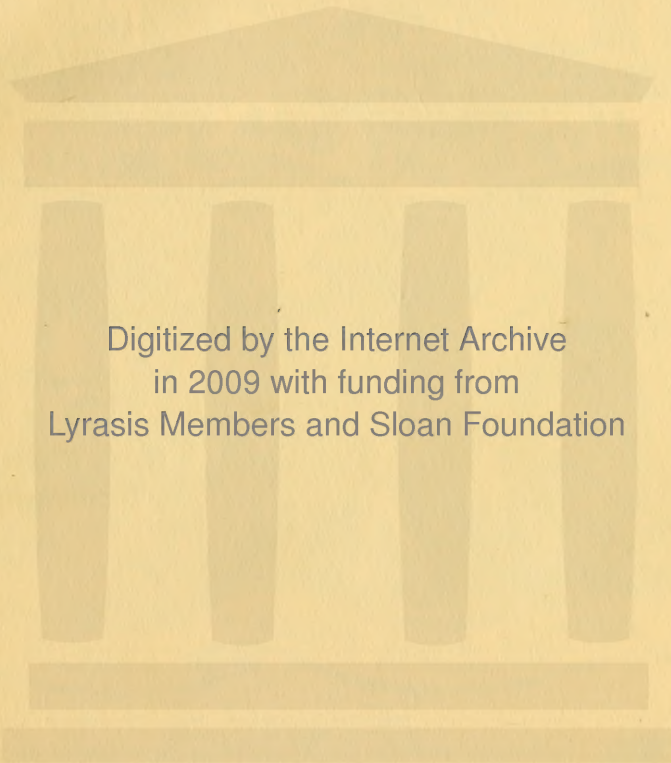


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VOLUME FOUR.

THE PLOUGH

THE LOOM AND THE ANVIL.

F. G. SKINNER AND MYRON FINCH, EDITORS.

A MONTHLY PUBLICATION

OF SIXTY-FOUR PAGES.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—
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E. C. SIKES
AND
MITCHELL FINEGOLD EDITORS

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INDEX TO VOL. IV.

- Absurdities and their Authors, 244.
 Ad Valorem System, Effect of, on Morals, 160.
 Agriculture, 308.
 " and Manufactures in Virginia, 102.
 " National Congress of, 97.
 " of Nottinghamshire, England, 201, 275, 333.
 " How Protection Benefits, 739.
 " Peculiarities of English, 718.
 " Religious Prosperity and Scientific, 423.
 " Census of, 481.
 " Measures for Improving, 732.
 Agricultural Dinners and Speeches, English, 45.
 " National Convention, 753.
 Agriculturist, What can he do? 725.
 Alabama, Coat of Arms for, 473.
 American Produce in Liverpool, 223.
 American Science, 248.
 Ammonia and Water in Guano, 191.
 An American Author, Justice to, 361.
 Analysis of the Turnip Beet, 290.
 Annual Fairs of 1851, 309.
 Apple Trees, Pruning, 556.
 Artificial Manuring, The Principles of, 231.
 Ashes, &c., as a Manure, 33.

 Barn-yards, The Scrapings of, for Wheat, 221.
 Bathing-rooms attached to Dwellings, 373.
 Beardsley's Planing Machine, 355.
 Bees, 376.

 Carrots, Value of, 750.
 Canker-Worms, 741.

 Cheapest Market, Buying in the, 372.
 Chemistry applied to Agriculture, 296, 494, 618.
 Chinese Husbandry and Policy, 525.
 " Opium Trade, 555.
 Chicory, 632.
 Chloroform, Operation on a Horse while under the Influence of, 745.
 Coal, Application of Anthracite to Iron-making, 372.
 Coal Regions of Pennsylvania, Visit to the, 301.
 " in North Carolina, 340.
 Coffee, How to make excellent, 635.
 Coins, Value of Foreign, &c., 183.
 Colonial System, Beauty of the, 34, 285.
 Competition with Cheap Labor, 298.
 Comstock's System of Terra Culture, 374.
 Congress, American Pomological, 220.
 Consumer from the Producer, Effects of Separating the, 731.
 Consumers, The Way to convert, into Producers of Food, 158.
 Cork Tree, The, 635.
 Corn, Hilling Indian, 691.
 " Oysters, How to make, 169.
 " Trade of Europe, The, 239.

 Cottage Designs, 399, 460, 531, 621, 661, 717.
 Cotton and Sugar, 94.
 " Making, to buy Provisions, 724.
 " Manufacture of, 112.
 " Manufactures Decreasing, 362.
 " Plant, New, 370.
 " Gin, The American, 341.
 Cows, Hints on the Treatment of, 171.
 Cultivation, Changes in Plants produced by, 752.

 Dairy Management, 47.
 Dairies of Holstein, 60.
 Daisies and Thistles, 273.
 Dispersion, Evils of, 78, 141, 291.
 Dog, The Shepherd's, 187.
 Dogs, To Protect Sheep from, 352.
 Drain Level, 630.
 Draining, New and Valuable Discovery in, 103.
 Durham Short-Horn Cattle, Great Sale of, 108.
 Duty, Who Pays the, 219, 541.

 Effect of bringing Consumer to the Producer, 218, 421.
 Effect of separating the Consumer and the Producer, 285, 731.
 Eggs, Preservation of, 483.
 English Agriculture, 548.
 " Monopoly, Frauds in the Advocates of, 257.
 " in South America, 34.
 Entomology, with Illustrations, 23.
 Everett, Speech of Hon. Edward, 304.
 Exhausting Land, Result of, 420.
 Extraordinary Change of Position, 590.

 Farming and Farming Lands in Minnesota, 458.
 Farmers and Book-learning, 685, 740.
 " and Mechanics Wanted, 43.
 " How they pay for Iron, 42.
 " Boys, A Hint to, 689.
 Farming, 633.
 " Statistics of, 496.
 " on a Small Scale, Effects of Judicious, 554.
 " Mode of, in England, 662.
 " Thorough or High, 537.
 Fattening Cattle, 49.
 Feeding Cattle, 437.
 Fertility of Soils, 540.
 Flax and Hemp, 154.
 " Old and New Methods of Treating, 671.
 " Cotton, 434, 751.
 " " M. Claussen's Invention, 211.
 " " Preparation of, 101.
 " Seed, as Food, 48.
 Flour, Great Packing of, 200.
 Fodder, Comparative View of different Kinds of, 128.
 Food of Plants, 35.
 " Market of the World, The Great, 357.
 " Setting Kettles for Boiling, 559.
 Forsythia Viridissima, 625.

83045

- Fowls, Management and Profit of, 491.
 Freedom of Trade, How to Protect, 465.
 Free Trade, Harmony of Real, &c., 321.
 " " England's Professions and Practice of, 41.
 " " Paradise of, and Direct Taxation, 734.
 " " Traders, Consistency of, 15.
 " " Logic of British, 722.
 French Merino, Foundation of the, 735.
 Fruit, Cultivation of, 540.
 " Trees, Wash for, 48.
 " The Use of, 172.
 Fruits raised by J. C. Hodges, 165.
 Fuel, Unseasoned, 436.
 Furniture, Home-made, 482.

 Georgia, Statistics and Prospects of, 44.
 Grain Crop, Crisis of the, 726.
 " Market of the World, 150.
 " Reaper, Start's Patent, 210.
 Grape, The White Native, 629.
 " Culture, 746.
 Grapes, Can they be grown successfully in Pots? 43.
 Grapes, How to Preserve Fresh, 168.
 Grass Lands, Manure for, 48.
 Grasshoppers, Immense Flight of, 167.
 Gravity, The Centre of, 228.
 Great Britain, Cause of Prosperity in, 688.
 Green-house Plants, General Treatment of, 192.
 Guano in Great Britain, Consumption of, 40.

 air, Wool, and Sheep Breeding, Lecture on, 88.
 Hard to Beat, 77.
 Harrow and its Uses, The, 546.
 Harvest Labor, 80.
 Hear Both Sides, 65, 193.
 Hemp and Flax, 154.
 Hints on Purity of Breeds, 99.
 " to Housekeepers, 365.
 Hollyhocks, 46.
 Horses, To Cure the Distemper in, 59.
 " Treatment of, when Heated, 552.
 Horticulture, &c., The Science of, 190.
 Hudson, Close of the, 627.
 Husbandry of the best portion of England, Prize Essay, 145.
 Hygrometer, Portable, 422.

 Illinois, Resources of, 470.
 " Western, 365.
 Importations, 34.
 Industry, The Sounds of, 149.
 Internal Improvements, 513.
 Ireland, The Way for Irishmen to avenge, 673.
 Iron, Domestic Product of, 433.
 " Duty on, 32.
 " Fence, 98.
 " How the Farmers pay for, 42.
 " Virginia R. R., and British, 105.
 " Works in the United States, 459.
 Irrigation, 17, 82, 292.
 Jottings, Editors', 505, 565 700, 759.

 Lamoville County, Vt., Topography of, 634.
 Land Draining, New and Valuable Discovery in, 103.
 Land, English, What gives Value to? 300.
 Lands, Renovating Southern, 350.
 Lecture on Hair, Wool, and Sheep-breeding, 88.
 Libraries, Public, 744.
 Lice on Cattle, To Kill, 26.
 Light in the Northwest, 289.
 Lime Burning in Great Britain, 551.
 " Composts, 172.
 " Preparing Mortar and Slaking, 622.
 " Superphosphate of, 119.

 Macon, Convention at, 310, 375.
 Maine, Agricultural Prospects of, 369.
 " How the Tariff of 1846 affects, 558.
 " Winter Wheat in, 377.
 Mangold Wurzel and Salt, 40.
 Manufacture of Pins, Hooks, and Eyes, 222.

 Manufacturing Property, Sale and Sacrifice of, 14.
 Manufactures at the South, 472, 50, 636.
 " and Agriculture in Virginia, 102.
 " How they increase the Products of Agricultural Labor, 303.
 Manure, Barn-yard Scrapings for Wheat, 221.
 " Value of, 747.
 " for Grass Lands, 49.
 " Muck as a, 499.
 Mapes on High Farming, 657.
 Maple Sugar, 167.
 March, Work for, 563.
 Market on the Land, Benefits of, 104, 411, 529.
 " of the World, The Great Grain, 150.
 Maryland, Resources of, 111.
 Maynard's Primer, 526.
 Meat, Pickling of, 48.
 Melons, Analysis of, 155.
 Mineral Ingredients of Average Crops, 45.
 Minnesota, Farming and Farming Lands in, 458, 687.
 Missouri, Farming in the Platte Country, 396.
 Monopoly System, Gambling Character of, 364.
 Morris, L. G., His Second Annual Sale, 107.
 Muck as a Manure, 499.

 National Agricultural Society, 717.
 Nations, Real Grandeur of, 1.
 Natural Sciences, 225.
 New Books, 500, 563, 637, 693, 756.
 Nobility of Russia and America, 81.
 North Carolina Coal, 340.
 November, Work for, 272.
 Nutrition in Various Grains, 238.

 Orange Tree, A Venerable, 111.
 Orchards, Management of, 363.
 Our Correspondence, 507, 567, 695.
 Over-production, 479.
 Ox, The, 370.

 Parsnips as a Field Crop, 737.
 Parting Words, 362.
 Pear-tree, Moving a, 151.
 Peat Charcoal, Ashes, &c., as Manure, 33.
 " a Deodorizer, 96.
 Phosphate of Lime as a Manure, 299.
 Pickman Farm, Salem, Mass., 215.
 Pie Plant, The, 759.
 Plank-Roads, Steam Locomotion upon, 748.
 Planing Machine, Beardsley's, 355.
 Plant more Trees, 59.
 Plants, The Food of, 34.
 Plaster, Experiments in the Use of, 497.
 " Use of, 171.
 Plough Deep, 492.
 Plough, Loom, and Anvil, Consequences of Separating, 561.
 Ploughing by Steam, 361.
 Poisons and their Antidotes, 359.
 Policy of Democratic Presidents, 95.
 Political Economy, Working of New, 656.
 Poppy Oil, 371.
 Pork, Profit of raising, 170.
 " Raising in Vermont, 535.
 Porter's Graduating Tryere for Blacksmiths' Forges, 155.
 Potato, The, 311.
 " Disease, 367.
 Potatoes, California, &c., 374.
 Poultry, Management of, 44.
 " Manure, How to save, 368.
 Preserves, How to keep, 547.
 Prize Hams, Mode of Curing, 755.
 Prospect for 1852, 449.
 Prosperity, 556.
 " New Test of a Nation's, 350.
 Protection and Commerce, 743.
 Protection, How it affects the Farmers of Germany, 679.
 Protection, The true Mode to Freedom of Trade, 159.
 Purity of Breeds, Hints on Preserving, 99.
 Pursuits, Concentration and Variety of, 752.

- Raspberry, Propagation of the, 165.
 Rats desert a Sinking Ship, 636.
 Reaping Machine and Irish Laborers, The, 152.
 Resources of California, 166, 533.
 " of Maryland, 111.
 " of Virginia, 110.
 Restrictive Policy, Which is the, 161.
 Rice Huller and Polisher, Strong's Improved Patent, 562.
 Rich Richer, and Poor Poorer, How to make the, 109.
 Roads, Compulsory Subscriptions to, 672.
 Roses, Select, 558.
- Salt as a Manure, 40, 467, 521.
 Science and Agriculture, 160.
 Screw, with Illustrations, The, 126.
 Seeds, Choice and Selection of, 412.
 Sheep-folding, 479.
 " Foundation of the French Merino, 735.
 " *vs.* Peach Trees, 161.
 " Improved Spanish Merino, 629.
 Skinner, Memoir of John S., 348.
 Slaughter-house, An Hour in a, 733.
 Smoke-Houses, 247.
 Soil, Pulverization of, 168.
 Soils, Fertility of, 540.
 Solar Rays, Influence of, 400.
 Song of the Railroad, The, 168.
 South Carolina, 736.
 " " and the South, The Future of, 413.
 " " Policy of, and its Effects, 534.
 South, Mineral Resources of the, 545.
 Sowing, Advantages of Thick, 680.
 Stables, Disinfection of, 738.
 Stock, Improvement of our Common, 528.
 Strawberries, Different Varieties of, 163.
 Sulphuretted Rags *vs.* Hares, 112.
 Surplus Wheat of the United States, 248.
 Swamp Muck as a Manure, 499.
- Tariff Convention in Northern New-York, 407.
 " of 1842 and 1846, Tendencies of, 214, 665.
 " of 1846, and the Great Staple of the South, 353.
- Tariff of 1846, how it affects Maine, 558.
 " " " protects Agriculture, 563.
 " " Effect of, on Merchants, 160.
 " " Fruits of, 246, 553.
 Tax on Land, The First and Greatest, 283.
 Tea in the United States, The Cultivation of, 483, 628.
 Teeth set on Edge, 243.
 Tennessee, Letters to a Planter of, 641, 705.
 Thistles and Daisies, 273.
 Thoughts and Facts, 29.
 Tilling much Ground without much Profit, 723.
 Tobacco, Cultivation, Inspection of, &c., 25, 31, 465, 475, 631.
 Topics of the Press, 568, 570, 761.
 Transportation, Cost of different Modes of, 27.
 " First Tax of, paid by Labor, 129.
 Trees, Shade and Ornamental, 171.
 " What are they made of? 747.
 " Method of Transplanting, 755.
 Turnip Beet, Analysis of, 290.
- University, A National, 557.
 Urine, a Fertilizer, 245.
- Vegetable Kingdom, The, 241.
 Vermont, Raising Pork in, 535.
 Veterinary Medicine, &c., Remarks on, 430.
 Vine, Cultivation of the, 181.
 Virginia and her Interests, 428.
 " Manufactures and Agriculture, 102.
 " Railroads and British Iron, 105.
 " Resources of, 110.
 " Wool Growing in, 162.
 Volcanic Action, Effects on Atmosphere, 358.
- Water Freshening Apparatus, Bread and Fell's, 274.
 Weights, Measures, Coins, &c., Foreign, 183.
 Wheat, Cause and Cure of Smut in, 165.
 Women in England, Out-door Occupations of, 100.
 Woodlands, Effect of Skinning, 434.
 Wool-growers, 366.
 Wool-growing in Australia, 427.
 " in Virginia, 262.

The Plough, the Loom, and the Anvil.

VOL. IV.

JULY, 1851.

No. I.

THOSE of our readers who are familiar with Mr. Carey's work, *The Past, the Present, and the Future*, will recognize in the following article a portion of one of its chapters. We have been frequently urged to lay it before them, as containing the most satisfactory explanation of the cause, throughout the Union, of the extraordinary tendency to dispersion. Men are every where flying from each other, scattering themselves over large surfaces, when each and every one of them is fully aware that his labor would be rendered doubly productive by increased facility of combining his efforts with those of other men. They fly from each other, that all may become producers of food, when each man knows that land and labor increase in value as the consumer of food takes his place by the side of its producer. Desirous to exhibit to our readers the explanation of the causes of these remarkable phenomena, we have obtained from the author a copy of this paper, revised and corrected to the present time; thus exhibiting a view of the effects of the tariff of 1846, in arresting the progress of the nation towards that highest point of real grandeur, indicated by the existence in perfection of the power of self-protection of the people, each among his neighbors, and of the nation among the community of nations.—
ED. P., L., AND A.

THE REAL GRANDEUR OF NATIONS.

THE population of the United States is by the late census above twenty-three millions; and the surface comprised within the existing States and territories considerably exceeds a million of square miles, containing probably seven hundred and fifty millions of acres, each of which is capable, at a moderate estimate, of feeding a full-grown man; and were it properly cultivated, it would clothe him too. The surface, then, that is already organized, is capable of maintaining seven hundred and fifty millions of people, or three fourths of the whole population of the globe; and yet men are seen, by thousands and almost tens of thousands, removing to Oregon and California to appropriate more land, of which they must cultivate the drier and less fertile soils; while behind them are left fertile lands covered with the finest timber, almost utterly valueless because the cost of destroying the timber would be more than the land would sell for when cleared—and other lands underlaid with marl and lime that would at the smallest cost of labor fertilize them for centuries.

For the benefit of the rich lands from which man thus flies, his predecessors have labored during more than a century. For their benefit, they have made roads, railroads, and canals—have built houses, and towns, and cities—and he can purchase them, with all their advantages of timber and soil, at the price sometimes of even sixty cents an acre, or one twentieth of the interest they have acquired in these improvements: yet he flies from them to commence the work of cultivation upon distant land that has no value, and that can never acquire any but from the labor that he himself bestows upon it. He flies from rich lands, that he may have at far less than cost, to obtain poor ones at full cost; and a heavy cost it is. He flies from the neighborhood of rich bottom lands, covered with manure that has there accumulated

for ages, and that he may have for little more than the labor of clearing them, while men near towns and cities pay thousands of dollars a year for the manure yielded by the produce of poor lands cultivated by him and others like himself.

The natural tendency of man is to combine his labors with those of his fellow-man. He knows that two can roll, and four can lift, a log, that one alone could neither roll nor lift. Here, however, men are seen flying from their fellow-men, each one seeking to roll his own log, for lift it he cannot. The labor of each is thus wasted on the road. The manure of his horses is wasted on the road; and his labor is unprofitably employed at the end of his journey.

The natural tendency of man is to combine his axe with his neighbor's spade, lending one and borrowing the other. Here, however, the man with the axe flies from the man who has a spade.

The natural tendency of man is to begin on the thin soil at the side of the hill, and to work down towards the rich soil at its foot, gathering manure on the latter with which to enrich the former; but here man flies from the rich soils near him, to seek the poor ones distant from him.

The natural tendency of man is to combine with his neighbors for improving old roads, but here man flies to a distance that he may employ his labor on new ones, while the old ones remain unimproved; and henceforth two are to be maintained instead of one.

The natural tendency of man is to combine with his neighbors for improving the character of education in old schools; but here he flies from his neighbors to places where there are no schools, and where there can be none until he shall build it himself.

The natural tendency of man is to hold in regard old places and old churches, mellowed by time and sanctified by the recollection of those who had before inhabited them; but here he flies from them, to cut out new places in the woods, whose harshness and hardness are quintupled by the recollection of the places he has left, occupied by the friends of his early years.

Why is this so? Why is it that men should fly from western New-York, where railroads run through rich lands, covered with dense forests, and through swamps that need drainage alone to give to cultivation the richest soils in the world, to seek the West, where they even now cultivate poor soils distant from market, yielding but ten or twelve bushels of wheat to the acre, and that small yield, too, annually decreasing* because of the necessity for starving the great machine, by wasting on the road the manure yielded by the horses or oxen employed in the work of transportation: while the wheat itself is consumed abroad, leaving nothing whatever to return to the land? Why is it that throughout that rich country, with its canals and railroads, its towns and its telegraphs, population diminishes, and land concentrates itself in fewer hands: always the signs of diminishing wealth?

Why is it that men fly the fertile valleys and rich slopes of northern New-York, near neighbors to both the St. Lawrence and Lake Champlain, where steamboats abound, to seek the shores of Lake Superior, there to obtain from the drier and less fertile soils, that *always must be* first cultivated, a reward of little more than five or six times the seed? Why is it that rich meadow-lands on the Schuylkill remain unimproved, while men seek Oregon and California? Why is it that vast forests still cover fine meadow-lands on the Susquehanna, capable of yielding crops whose *tons* would number more than the *bushels* ob-

* See Report of Commissioner of Patents, January, 1845, p. 25.

tained from the wheat lands of Ohio, and furnishing manure in tons for fertilizing the poor soils of the hills, on which now stand farm-houses in the midst of farms that have been in cultivation for half a century? Why do men seek Iowa, to raise from an acre thirty bushels of Indian corn, that before it can reach market must be converted into pork, while the lower lands of Virginia and Maryland are abandoned—lands that are nearer to market, and from which, by careful cultivation, a hundred bushels might be obtained? Why is it that men fly from the meadow-lands of South Carolina, leaving the remaining inhabitants a prey to fevers and malaria consequent upon diminished population, to seek the thin land of Texas, at the heads of the streams; there to raise small crops to be wagoned over half-made roads down to new towns, possessing none of the conveniences that tend so greatly to diminish the friction between the consumer and the producer? Why is it that men are everywhere seen flying from their fellow-men—from those destined by the Deity to be their helpmates—from parents and relations—from old houses, and old churches, and old school-houses—old comforts, and old feelings—and from all the conveniences and advantages that tend so largely to promote their happiness and their respectability, and to increase their powers of exertion—to seek in Texas and Iowa, Oregon and California, new homes and new relations, amidst woods that they cannot fell, and swamps that they cannot drain, and upon the drier and less fertile soils that yield, invariably, the smallest return to labor?

These things would seem almost impossible: yet if we turn to India, we may see the poor Hindoo cultivating the poorest soils, and then laboring, almost in vain, to drive through the rich black clay that lies between him and his market the half-starved cattle that bear his miserable crop. Here we have the same state of things; and both here and there it may be traced to the same cause—*necessity*. In neither can men exercise *power* over the rich soils, because in *neither have men power over themselves*; and until they shall have it, they must continue to fly from the neighborhood of rich soils capable of yielding tons, by aid of whose manure poor soils might be enriched, to poor soils becoming daily poorer, because to them even the manure yielded by their own little product cannot be returned. They borrow from the earth, and they do not repay, and therefore it is that they find an empty exchequer; performing thus the process that farmers are enabled to avoid, when, as in England and New-England, the consumer takes his place by the side of the producer. Therefore it is that the average produce of New-York is but fourteen bushels of wheat to the acre, while that of Ohio is even less, although acres may readily be made to yield forty or fifty bushels; and therefore it is that the average produce of Indian corn is but twenty-five, when it should be a hundred bushels, and that of potatoes but ninety when it might be four hundred bushels.

If we desire to understand the cause of these extraordinary facts, we may, perhaps, obtain our object by taking a bird's-eye view of a farm-house of western Pennsylvania, near neighbor to the rich meadow-land above described. The farmer is reading the newspaper, anxious to know what are the crops of England, and whether or not the rot has destroyed the potato crop in Ireland. Four years since many of the people of Europe starved; but he sold his crop at a good price, and paid off his debts. This year he wishes to purchase a new wagon, and to add to his stock of horses, but, unhappily for him, the farmers of England have had a favorable season, and the rot has not appeared in Ireland. Starvation will not sweep off its thousands, and he will get neither horses nor wagon.

His eldest son is preparing to remove to the West, to raise wheat and corn

in Wisconsin or Iowa, and to send to the already overstocked markets increased supplies of food. His daughter is grieving for the approaching loss of her brother, and of her sweetheart, the son of the neighboring wool-grower, who is about to leave for Michigan to raise wool, that he may compete with his father, who, on his part, is studying carefully the newspapers in hopes to see that the sheep of Australia have rotted off and thus diminished the supply of wool. He desires to pay off his debts, but this he cannot do, unless the price of wool should rise, and thus increase the difficulty of obtaining clothing. Why do these sons move off? It is because there is no demand for labor. All the land is held in large forms, because the swamps are undrained and the heavily timbered land is uncleared, and the less fertile soils alone are cultivated; and farmers that would live at all must farm and fence in a great deal of land, where a dozen bushels to the acre are considered a good crop. Why does he not clear some of the meadow-land? It is because there is no demand for milk, or for fresh meat—for hay, or turnips, or potatoes—or for any of those things of which the earth yields largely, and which from their bulk will not bear carriage to distant markets. He knows that when the great machine yields by tons, the product is worth little unless there be mouths on the spot to eat; but that when he restricts it to bushels, the product may be transported to the mouths. There is no demand for timber, for all the young men fly to the West, and new houses are not required. The timber is valueless, and the land is not worth clearing to raise wheat, almost the only product of the earth that *will* bear carriage. To clear an acre would cost as much as would buy a dozen in Iowa; and the product of four acres, at ten or a dozen bushels each, would be equal to one of forty or fifty bushels. He therefore goes to the West to raise more wheat, while his friend goes to raise more wool; and his sister remains at home unmarried. Why does she not marry, and accompany her lover? It is because she has found no demand for her labor, and has earned no wages to enable her to contribute to the expense of furnishing the house.

Here, then, we have labor, male and female, superabundant for want of wages with which to buy food, and clothing, and houses—food superabundant, for want of mouths to eat it—clothing material superabundant, for want of people to wear it—timber superabundant, for want of people desiring to build houses—fertile land superabundant, for want of people to drink milk and eat butter and veal—and poor land superabundant, for want of the manure that has for ages accumulated in the river bottom; while the men who might eat the veal and drink the milk produced on rich lands, are flying to the West to waste their labor on poor ones: *those who should be consumers of food becoming producers of food.*

Why is this? It is because they have no market at which the labor, male and female—the food and the wool—can be exchanged for each other. They want a woollen mill, and had they this, the sons would stay at home and consume food, instead of going abroad to produce more. The daughters would marry, and would need houses. The timber would be cleared, and the fertile lands would be cultivated. The manure would be made, and the poor lands would be made rich. The milk would be drunk, and the veal would be eaten, and the swamps would be drained to make meadows. The saw-mill would come, and the sawyer would eat corn. The blacksmith, the tailor, the hatter, and the printer would come, and all would eat corn. The town would grow up, and acres would become lots. The farms would be divided, and the fencing of each diminished. The railroad would be made, and the coal and iron would come; and with each step in this progress, the farmer would obtain a better price for his corn and his wool, enabling him from year to year

to appropriate more and more labor to the development of the vast treasures of the earth; to building up the great machine, whose value would increase in the precise ratio of the increase in the return to his labor. The more he could take out of it, the more it would be worth.

The good people of this neighborhood now use bad machinery of exchange. They send to market annually five thousand tons of food and wool, one half of which is absorbed by the horses, and men, and machines, required for its transportation, conversion, and exchange; and thus they pay annually as much as would be required for the erection of a place of home exchange. The amount thus spent is lost for ever. The following year the same expenditure is needed; and the next, and every succeeding one. The same labor once applied at home, would stand, and in the following year the wagons, and horses, and men would be at work upon the farms, clearing richer lands, and carrying manure to the old ones; and with every year new combinations would arise—new and better lands would be cleared—new houses would be needed—new demands for timber would arise—new marriages would take place—new children would be born—and with each step in the progress of population and wealth, men would become richer and happier, and land would be more divided, and farms would be better cultivated, and schoolmasters and preachers would be better, and man would acquire more power over land and over himself.

Let us now take a similar view of one of our planting friends in the South. His cotton is half picked, but early frost has come and killed the rest. Why is this? He had not hands to pick it. Why had he not? Because throughout the year there is no demand for labor. His best lands are uncleared, because there is no demand for lumber. His meadow-lands are undrained, because there is no demand for milk or veal. He raises bushels of corn, when he might have tons of turnips or potatoes. He wants a place of exchange for labor, food and cotton—a cotton mill. His neighbor is going West to the light soils of Texas, leaving the rich soils untouched. He is going to raise more cotton. If he stayed, he might be a consumer of corn, and cotton, and milk, and veal, and beef.

If we now ask the worthy planter why he does not clear the rich land close to the poorer soil that he now cultivates, his answer will be, that he has offered twenty or thirty dollars an acre for clearing it, and destroying the timber, but in vain; nobody will undertake it. Nobody needs timber. There are no houses wanted, for his neighbors are flying to poorer and more distant soils. There are no railroad sills needed, for the production of the neighborhood diminishes, and men will not make roads except when production increases. If we look in upon him at his hours of leisure, we shall find him intent upon the last news from England; desiring to know how many mills are closed—how many are working half time—how many operatives have been discharged to starve—and wondering within himself if a time will ever arrive when it will be possible to calculate upon a continuance of the same state of things in that country during any single half year. If we look in upon him when meeting with his neighbor planters, we shall find them discussing the expediency of restricting the culture of cotton; or of holding conventions for the purpose of determining how much shall be grown, with a view to acquire some *power* over their own actions, and thus to diminish their *necessities*—but all in vain. Each successive arrival brings with it the news of a further reduction in prices, yet no means can be devised to bring the supply down to the demand; and yet his neighbor goes to Texas *to raise more cotton*.

He and his neighbors send annually to market four thousand bales, of which

the chief part is swallowed up by the men and the horses and machines employed in the business of transportation and exchange. They send five thousand bales of cotton to get in exchange one thousand bales of cloth. Two thousand bales would build a place of exchange for labor, and corn, and cotton; and the new machinery of exchange would stand. Thenceforward, the produce of hundreds of these bales would go upon the land, and newer and better soils would be cleared—and labor would become more valuable—and wages would rise—and men would marry, and houses would be needed, and children would be born—and land would become divided—and the planter would in time become the landlord of happy tenants, cultivating their own little farms for their own advantage; and thus it is slaves would become free, while their masters would become rich, and only as they became rich.

If we desire to see this process in full operation, we must turn our eyes towards New-England. The best soils are there cultivated, because there is a market on the spot for those productions which our great mother earth supplies in such profusion that they will not bear carriage to distant markets. The Yankee can take tons from the land, and he can return tons of manure back to it, because he uses the best machinery of exchange. He concentrates his population by tens of thousands upon the poor soils of Massachusetts and Rhode Island, and there he consumes the corn raised by the people of the West, and places on his own thin soil the manure with which they part. His soils double in productive power, while theirs fall off. He becomes rich and richer every day, by concentration. They remain poor, and then they scatter themselves over new thin soils, to repeat in Iowa and Oregon the process of exhaustion already so well commenced in New-York, Virginia, and Ohio.

If we desire to see it elsewhere, we must turn to Eastern Pennsylvania. Under the tariff of 1842, population was there concentrating itself in the coal and iron regions; and what was the result? She had ceased to be a corn-exporting State. Her miners ate the wheat of Michigan and Iowa. Her farmers were then clearing richer land. Houses were needed, and mine-props were needed, and railroad sills were needed, and boat timber was needed, and in every spot, for fifty miles around the coal region, the farmers were felling their trees, which yielded them the means of draining their meadows, while the demand for milk, and beef, and veal, and potatoes, and turnips, and all those vegetable products that the earth yielded in greatest abundance, enabled them to grow rich themselves and to make their poor soils rich. She had ceased to be a rival to Ohio or Wisconsin in the market of the world, and, therefore, their products were more valuable; and with the increased value of their productions, the planter of Mississippi or Alabama was enabled advantageously to devote more of his land to raising food, and less to raising cotton, the effect of which has since been seen in the increased price of the latter. Since then the coal trade has become stationary, and many of the mines have been discontinued. The iron trade has been diminished one third, and many of the furnaces have been abandoned. Her people have been and are now dispersing themselves over the West, to become producers of food, instead of consumers of food, and more planters will now raise cotton, and fewer will now raise food; the result of which is about to be seen in the fall in the price of cotton.

Such was the effect of a trade of six millions of dollars, the establishment of which had required fifty millions of dollars. Two millions more would have put up fifty furnaces, capable of producing two hundred and fifty thousand tons of iron, the producers of which would have eaten as much food, occupied as many houses, and worn as much cloth, as those who had been set in motion by the fifty millions already expended. In the fashioning of the

great machine, it is the first step that costs, and each is but preparatory to a newer and greater and more profitable one.

Three or four millions more would have erected rolling-mills to convert all this iron into bars, and thus to produce a demand upon the farmer and the planter as great as that which has been produced by the fifty millions.

Ten millions would have built a hundred great cotton factories, furnishing a market for two hundred thousand bales of cotton, and five millions of dollars' worth of corn and clothing.

Instead of opening these mines and building these furnaces and rolling-mills and cotton-mills, the tariff of 1846 has closed large numbers of those which were already in existence, and driven the miners and the workmen in iron and cloth to seek the West, there to become producers of food.

The people who made the machinery and built the houses, would have been consumers of corn and cotton, and not producers of either. They would have needed houses at home, instead of houses in Texas or Iowa. The demand for houses would have made a market for timber. The demand for timber would have cleared the rich soils with profit to their owner, who would have felled his trees instead of paying men for killing them. He would have produced more food, and more people would have come to eat it, and they would have wanted more clothing, and more mills would have been needed, and more stone, and timber, and lime, and clay would have been required; and with each step he would have been improving the great machine, while concentration would have afforded him means of improving his mind and his tastes, and of educating his children.

Six millions would have built two hundred woollen factories, that would have used thirty millions of pounds of wool in a year; and distributed among farmers, workmen, and workwomen, twenty millions of dollars in a year, to be applied to the purchase of food, by which the farmer would have been enabled to improve his better lands—of wool, by means of which he would have been enabled to improve his breed, and increase his product—of timber, by aid of which he would have been enabled to clear his land—and of stone, by aid of which he would have been enabled to bring his quarries into use; while the constantly increasing circulation of man and of machinery, and of their products, would have offered large inducements to improve the roads by which he could transport to market the surplus, for which he would have obtained better prices; because population would have increased far more rapidly than at present, and men would have remained at home instead of seeking the wilds of the West; and the increased demand for labor throughout the country would have enabled all to consume more; and thus his *powers* when at market would have increased as his *necessity* for seeking that market decreased.

But is this all? It is not. The annual saving from this improvement of the machinery of exchange would have gone again upon the land, and more lumber would have been raised, and wages would have been greater, and the demand for houses and machinery would have made a market for the labor of thousands, all of whom would themselves have needed houses, and all would have consumed more food and clothing; and the quantity to be sent into the great market of the world would have diminished, and prices would have risen. The farmer and planter would have increased their crops, while the machinery of transportation would have improved and the loss in exchanging would have diminished and all would have grown rich, and all would have acquired more power over land, and over themselves; while their land would have improved hourly in value. Their *necessities* would have di-

minished, and their *power* would have increased, and as they made their own iron and cloth, and ate their own food, they would have been enabled to purchase more silks, and books, and newspapers, and pictures, and statues; and intellectual power would thus have grown with physical and moral power, and thus wdr ioulpmovement have kept pace with freedom.

Why has not all this been done? Why is it not now being done? Let us ask the farmer. He will tell us that cloth is sometimes high and sometimes low: that the woollen manufacturers have invariably been ruined by the perpetual fluctuations of England. He will say that at this moment, under the tariff of 1846, coal and iron, and cottons and woollens are destroying all those engaged in their production. Further, he will say that if he and his neighbor farmers desired to associate for the purpose of building a mill, they would have to be bound, each for all; and that they cannot get a charter, as there is no general law for that purpose, and the power freely to associate has no existence.

Ask the planter. He will tell us that the cotton manufacturers have been ruined over and over again—that cotton goods are sometimes high and sometimes low—that last year they were high, and that now England is forcing them into every market of the world—that he has no charter, and that without this he and his fellow-planters cannot associate; whereas, if they had a general law for the purpose, every man in the neighborhood would subscribe a little, and that then they might make an effort at concentration.

Ask the farmer of Pennsylvania why he does not associate with his neighbors to erect a furnace, and his answer will be, that eight years since all the iron-masters were nearly ruined; that five years since iron was worth £10 or £12 per ton, but that now it is down to £5, and that those who then built furnaces and rolling-mills have since been ruined.

Here lies the secret of dispersion. Here is to be found the cause of the impossibility of concentration. The people of the United States have no power over their own actions. They waste annually more labor in hauling *their products to market, and their consumers from market*, to the West, there to be employed in raising more food and cotton, than would build places of exchange for all their labor and food and wool. They waste on the roads the manure yielded by the products of poor soils, and they leave on the rich ones the manure that has accumulated for ages, and that would render their poor ones rich; and while they shall continue so to do, they must scatter themselves over the far West—they must leave home, and friends and school-houses behind—they must continue to be hewers of wood and drawers of water on the poor soils, instead of becoming rich on the fertile ones—they must continue to obtain bushels where they might have tons—they must continue to do as do the people of India: cultivate poor soils, and find themselves bogged in the rich ones through which they have to drag their products to market.

The annual loss to the people of the Union, from the want of the power to concentrate themselves on the rich soils, is far more than the value of the whole exports of England *to all parts of the world*, and were she to give them the whole, the gift would be injurious. It would tend only to scatter the people more widely, for concentration would then be impossible, and *without that the earth cannot be made to yield*; and unless it be made to do so, the poor soils cannot be made rich. **POPULATION MAKES THE FOOD COME FROM THE RICH SOILS**, while depopulation forces men back to the poor ones.

The number of States employed in producing cotton is ten. The whole product is about two million three hundred thousand bales, and the average

is therefore about two hundred and thirty thousand bales per State. To prepare a State for producing that quantity, and the food that is to be consumed by the men who raise it, has cost hundreds of millions of dollars. To place in that State machinery requisite for the conversion of all its cotton into cloth, would cost twelve or fifteen millions of dollars, *or less than the amount annually wasted* of labor for want of employment at home—of labor and manure in transporting the product to market—of labor and manure in transporting men to new lands—of crop, from the want of hands to pick it—of freights, because of the increased demand for ships and wagons—and of prices, because of the surplus in the markets of the world: and *less than half the amount annually wasted*, because of the necessity for cultivating poor soils while rich ones lie idle.

The cost of transporting the hides and the food to the shoemaker, his awl and his lapstone, is great, and all the manure is lost, and lost for ever. The cost of bringing the awl and the lapstone to the hides and the food is small, and all the manure is saved; and the great machine is improved, because the manure is saved; and the shoemaker wants a house, and the house wants timber and stone, by the furnishing of which the land is cleared. A large portion of the people of the United States are busily employed in carrying the hides and the food to the awl and the lapstone, and in driving people who might use the awl to other places where they must raise more hides and food.

What is the remedy for this state of things? The answer is easy: England must be made to raise her own food, and she must be made to let other nations consume theirs. The resistance of the United States put an end to the navigation laws. Their resistance killed the right of search. Their resistance will kill the colonial system, and give freedom to India and Ireland, to the people of England, and to themselves.

To their resistance is due the fact that competition has already been in some degree established, and that the monopoly system of England is tending gradually to its fall. To make a short war, however, it should be a strong one. No set of men can now feel any confidence in erecting iron-works, cotton-mills, or woollen-mills, and until confidence shall be restored, the little capitalists cannot get to work, and the business must remain in the hands of great ones, who can run great risks; and while that shall be the case, but little will be done. Almost all that exists in the Union is the work of the millions of little men engaged in improving the great machine—the earth—and when they, the little farmers, and little mechanics, and little shop-keepers, shall feel themselves protected in their efforts to get to work, the production of iron, and of cotton and woollen cloth, will go ahead as rapidly as farming has done, and then concentration will take place, and the rich soils will come into cultivation, and every county in the Union will have its iron, or its cotton, or its woollens exchange, and then land will double in product and in value. There is not a single county that could not supply the stone, the timber, and the labor necessary for building a furnace or a mill, and the food or the cotton necessary for the purchase of machinery—thus making a place of home exchange. Once built, further capital would not be needed. The grower of corn, and hay, and oats, and wool, and the young men and young women who have labor to sell, perform their exchanges at the factory, which becomes a little bank, in which each man buys a share while accumulating means to build a house or buy a farm, selling it again when the house is built or the farm is bought. Throughout the Union, south of the Hudson, there is not a single county in which there is not more labor unemployed than would build

such a place of exchange; and not one in which, for want of such a place, there is not wasted ten times more labor power than would suffice to carry it on. Were each county to help itself, all would be helped.

Wealth is power. The people of the United States have the wealth. That wealth has given them power, dispersed as they have been, to do much. Concentration will give them greater wealth and greater power. Their twenty-three millions produce at this moment a greater quantity of commodities than the people of England, while they build twice as many houses—make twice as many roads—apply thrice the labor to the improvement of land—build four times as many school-houses and churches—and print ten times as many newspapers. The machinery of production is greater than that of England, and all they now require is better machinery of exchange. Let the farmers and planters have this, and population will increase with greater rapidity than ever, for young men will stay at home and marry, instead of going to the West; and tens of thousands of mechanics, and of coal and iron miners, will seek the United States; while laborers will come by hundreds of thousands, if not by millions, and every man will furnish a mouth to be fed, instead of, as now, furnishing hands to produce food. They will then be consumers of corn, and wool, and cotton, instead of producers—customers, instead of rivals. The Irishman, once landed here, will consume a dozen pounds of cotton where now he consumes not even one, and he will consume mutton and beef, instead of starving on a handful of potatoes. Corn and cotton will be produced at less cost of labor, and wages in corn and cotton will be higher, while cloth and iron will be cheaper, and the farmer will cease to have to pray for bad crops in Europe; while the planter will find in the increased demand for his product, consequent upon the higher wages of England and of Europe, a certainty of a good market for all he has to spare. Coffee, and tea, and sugar will then be paid for in cotton cloths, and the men who make the cloth will be customers to himself and to his brother agriculturists of the north, who will use more cotton than at present; while Brazil and Cuba will want more cloths, because they will have a better market for their sugar. Every diminution in the machinery of exchange tends to give more time for improving the great machine of production, whether for cotton or sugar, wheat, rye, oats, or hemp—to increase the quantity produced—to increase the wages of the laborer and the profits of the capitalist, whether landed or moneyed—and to increase the comfort and happiness of all.

Let but the people of the United States set the example of a determined resistance to the system, and it will be followed by all Europe. British artisans will then seek America and Germany, and Britain will raise her own food. Her fleets and armies will disappear, and her colonies will become independent.

The people of the United States owe this to themselves, and to the world. They enjoy a higher degree of happiness than has fallen to the lot of any other nation, and they should desire to aid their fellow-men in England, in Ireland, in Germany, and in India, and by helping themselves they will help them. As colonies, India and Ireland will remain poor. As independent nations, they will become rich, for they too will insist on the right of placing the consumer by the side of the producer.

Westward the star of empire wends its way. From the west to the east civilization has gone, and so it has yet to go—from the base of the Alleghenies to the foot of the Himalaya. The measure is one of peaceful and quiet, but determined, and it should be of united, action. It is one that interests

Every planter that wishes to cultivate rich lands instead of poor ones :

Every farmer that would raise tons instead of bushels :
 Every father that would wish to see his sons and his sons' sons settle round him :

Every mother that wishes to see her daughters married :

Every son that would have a wife and a home of his own :

Every daughter that would have a husband :

Every journeyman that would be an employer :

Every laborer that would have a farm and a house, or shop, of his own :

Every property-holder that desires higher rents :

Every man that hates crime and loves virtue :

Every man that loves literature and art :

Every man that loves freedom :

Every man that loves *the people* of England : or of France :

Every man that loves Ireland :

Every man that feels for India :

Every man that loves his old fatherland, Germany :

Every man that loves free trade :

Every man that loves peace :

Every man that loves his fellow-man :

Every man that loves his Creator :

Every man that desires that the great law of Christ, "Do unto others as ye would that others should do unto you," should become universally operative.

It is the great work reserved for the people of these United States. It is one that they have the power to accomplish, and it should be entered upon with the same feeling that animated the Puritans of old ; the same that gave confidence to the men who, seventy years since, signed the Declaration of Independence. It would be a peaceful war for the emancipation of themselves and of the world.

For two centuries past, the world has been perpetually disturbed by the wars of England and France, for ships, colonies, and commerce. Had France had no colonies, there would, probably, have been no wars of the French Revolution after the failure of the invasion of 1792. But for them, France would have been permitted quietly to settle down, in which case Italy and Spain, Holland, Germany, and Russia, would have escaped the war of twenty years, and France might now be rich, powerful, and free. The system of both nations is one of perpetual interference. At one time, Poland is to be excited ; at another, she is to be abandoned. At one time, Greece is to be aided ; at another, Syria is to be delivered over to the tender mercies of the Egyptian Pasha ; at a third, China is to be made to buy opium, and to open her ports to the cloths of the men who have ruined the poor manufacturers of India. At one moment, the affairs of Spain require the interposition of England ; at the next, we see her fleets in Portugal, dictating terms to people driven by oppression to revolt. At another, France governs Spain, and the country is made a scene of murderous war, while the court is one of endless intrigue, having for its object the promotion of the interests—not of France, but—of the family of Louis Philippe or Louis Napoleon : all anxious, as French princes have at all times been, for *appanages* at home, and thrones abroad. For centuries has the European world been agitated by the princes of the houses of Valois and Bourbon, and those of the house of Orleans and of the family of Bonaparte are well disposed to follow their example. For years past has almost all commerce with the La Plata been interdicted, because England and France chose to interfere in affairs that were not their

own. They failed, and the country was worse by years of wars and poverty. But a few years since, the affairs of Texas claimed their attention. Now Central America has become the focus of the intrigues of England. But a short time since, the people of the United States were to be *compelled* to join in a crusade against the African slave-trade, which would long since have ceased to exist had England and France permitted the world to remain at peace. At every difference of opinion as to rights, we are menaced with the destruction of our towns and cities, and the seizure of our ships. At every quarrel, whether to maintain the trade in opium, or to put down that in slaves, our trade is interrupted. The two nations are everywhere seen meddling with everybody's business, and neglecting their own.

They are the great bullies of the world. Italy would now be strong to help herself, but for the wars of France and England. So would Spain and Germany. Wars made for private ends are afterwards carried on for "the public good," and in defense of "the liberties of Europe," which will take care of themselves whenever the armies and fleets of England and France shall disappear, but not until then. Both countries should be placed under bonds to keep the peace; and the peace-loving portions of the earth can take those bonds when they will. Both should be made to turn their attention homeward—to raise their own food—to feed their starving artisans—to improve their own morals—to free their own people from the thousand restrictions under which they labor—and thus would they set to the world an example far more worthy to be followed than when they are seen preaching liberty and practising oppression; paying for slaves in the West Indies, and making slaves in the East by means of taxes on salt for the payment of dividends on India stock. Nations that pursue the natural system of concentration will find that the first of all rules is the simple one: "Let every man mind his own business." The people of the United States possess the power of compelling both nations to follow this rule; for if they determine on the course that is essential to their prosperity, it will be followed throughout Europe; and then fleets and armies must be abandoned, and colonies must be left to exercise the right of self-government.

THE REAL GRANDEUR OF NATIONS CONSISTS IN THE PERFECTION OF THE SELF-DEFENSIVE POWER, and that is now possessed by the United States in a degree greater than any other nation of the world. They have laid the foundation of a pyramid whose base is a million of square miles, occupied by twenty-three millions of people, and filled with little communities, each with its little school-house, its church, and its newspaper. Each of those little communities occupies space sufficient for a large one, with its academy, or its colleges, its numerous churches, its newspapers, its bookstores, and its libraries, all aiding to give to the structure a height proportioned to its base; and that height may be obtained whenever the planters and farmers of the Union shall determine to exercise the right peaceably to defend themselves. Until they shall do so, concentration cannot take place. Until they shall do so, their people must continue to waste their labor upon poor soils, yielding bushels, while neglecting rich ones that would yield tons. Whenever they shall do so, they will at once take the place to which they are entitled by two centuries of peaceful action, in which it is difficult to discover a single important error until the occasion of the Mexican war; and we cannot but hope that they will hereafter exhibit to the world a specimen of real greatness, in protecting instead of assaulting their poorer neighbors incapable of self-defence. They are strong, and they can afford to be generous. With England and with France lies the

great contest, and it is for the exercise of power over their own actions; for the exercise of the right to stay at home and become rich by the cultivation of rich soils, in preference to flying from home to remain poor while cultivating poor ones: and every dollar spent in support of fleets and armies tends to lessen the power vigorously to maintain that one which is to result in the emancipation of the world from the tyranny of foreign fleets and armies, and the establishment of perfect peace. The truest grandeur consists in the most perfect power over ourselves, our thoughts, and actions, and in conceding to all men the exercise of the same powers that we desire for ourselves. The people of the United States do not exercise that power; but they may do so, and we trust they will. Their position is one of surpassing strength. They are twenty-three millions, among whom there is universal activity and intelligence. Of these seven hundred and fifty thousand are the product of the present year, and soon the addition of a year will reach a million. They have more school-houses and more scholars in them, more churches and more hearers in them, and thus print more books, than any other nation of the world. They have more and better printing-presses, and they consume more paper; and their authors are better paid.* They have a mercantile marine that can perform more service in a given time than any other. Their machinery of manufacture already, in many departments, takes precedence of that of England. They have railroads, canals, and magnetic telegraphs, over a surface of five hundred millions of acres. They have thirty millions of sheep, five millions of horses and mules, fifteen millions of cattle, and thirty millions of hogs.† They raise a thousand millions of bushels of food for man, and more than a thousand millions of pounds of cotton; and this vast product can be doubled by the application of the same quantity of labor, whenever they shall determine that *they will* make their own cloth and their own iron, and, by thus placing the consumer by the side of the producer, enable the latter to cultivate rich soils instead of poor ones. So soon as they shall have thus determined, thousands of tons of the surplus machinery of England, and tens of thousands of her artisans, will be seen leaving her shores to place themselves where food and cotton together grow, and where liberal and constant wages will be the reward of moderate but steady labor; and the Union will then, but not till then, occupy that position before the world to which its generally peaceful policy so fully entitles it. It needs but the effort to place it speedily in a position to dictate the law of the ocean—to say to the other nations of Europe that in future the trade of the world shall be freed from the restrictions imposed by blockades, orders in council, rules of '56, colonial systems, and all the other contrivances by which the prosperity of ourselves and of the world has been thus far hindered. Such was the tendency of the democratic tariff of 1842. Directly the reverse is that of the tariff of 1846. The one tended to give us power over the movements of the world by increasing our power over ourselves; the other tends to diminish our power to control the movements of the world by lessening our power over ourselves. The tendency of the one was to peaceful and quiet grandeur; that of the other to warlike and unquiet littleness. It is for the people to choose between them.

* We except from this the authors of such trash as "*Le Juif Errant*," and of histories whose object is to teach that "glory" is the great object of life, and that it is to be sought at any sacrifice of honor or honesty. Such writers are better paid in France.

† Great Britain and Ireland, with a population of twenty-eight millions, have forty millions of sheep, two millions of horses, and five millions of cattle. France, with a population of thirty-five millions, has thirty millions of sheep, three millions of horses, seven millions of cattle, and five millions of hogs.

SALE AND SACRIFICE OF MANUFACTURING PROPERTY.

THE *New-Bedford Mercury* says that the cotton mills, machinery, and dwelling-houses of the Farmers' Manufacturing, Company, in Attleboro', were disposed of at auction on the 4th inst., by assignee's sale, for \$22,075. The property originally cost from \$50,000 to \$60,000.

One by one the farmer's best customers are being sacrificed under the operation of the tariff of 1846; and as a necessary consequence of this, we see the gradual conversion of our population, from being consumers of food and *customers of the farmer*, into producers of food and *rivals of the farmer*.

The diminished demand for the smaller products of the farm, or for those more bulky products that will not bear carriage, resulting from the closing of mills, and furnaces, and mines, causes the emigration of thousands and tens of thousands of men who would have given value to the land; and hence it is that we see the new States being filled up with the "steady, well-educated farmers" of the older States referred to in the following article:—

IMMIGRATION.—The Iowa papers record the arrival of large numbers of immigrants in that flourishing State. It is said that the majority of them are not foreigners, but of the steady, well-educated, and industrious farmers of New-York, Ohio, Pennsylvania, and other northern States. For the most part, they are men of substance, as well as enterprise.

We are now rapidly converting our population into producers of food, and sacrificing the consumers of food; and this we are doing because it is held that that is the mode of procedure by which the farmer will be enabled to obtain higher prices for his products. The next operation of our *free trade* friends is to be that of sacrificing the farmer by aid of the mechanics and operatives of the Union, who are assured that "*the practical operation of the duties on agricultural products is to raise the price of the necessities of life to the non-producing consumers in towns on the seaboard, to the exclusive advantage of the Western farmer.*" We invite our agricultural friends to peruse the following sketch of the course of proceeding by aid of which the advocates of the tariff of 1846 expect to be enabled to abolish the protection now afforded to them against the cheap land and cheap labor of Canada, and then to determine if their own interests do not imperiously require that they should combine their efforts with those of the other advocates of protection to American labor:—

The Legislature [of Canada] has now been in session nearly three weeks; but, with the exception of some skirmishing, in which McKenzie took an active part, the proceedings have been chiefly of a routine description. There is a series of resolutions before the House, which will probably come up for discussion in a day or two; the object of which is to forward an address to her Majesty, praying that she will recommend to the Imperial Parliament to enact that a like duty may be imposed on grain, breadstuffs, vegetables, fruits, seeds, animals, hides, wool, cheese, tallow, horns, salted and fresh meats, ores, plaster of Paris, ashes, timber, staves, wood and lumber of all kinds, as are imposed by foreign nations on the importation of similar productions of Great Britain and her dependencies; and praying further, in another series, which has been submitted for consideration, that her Majesty will not withhold her royal assent from any act that may be passed by the Legislature of this Province, for imposing differential duties on imports, by which importers will be encouraged to bring their goods into Canada by sea, via the St. Lawrence, instead of through the United States.

It will hardly be possible at present to form any idea so as to judge with certainty of the action of the House on this subject; but from what fell from Mr. Hincks, the leader of the Government in the House, the other day, it is not improbable both propositions

will be entertained ; the effect of which would probably be the successful result of the negotiations that are pending between the United States and Great Britain ; as the duties at present imposed in the former country on the productions of Canada, (which are not exacted, however, when they are exported,) *the practical operation of which is to raise the price of the necessaries of life to the non-producing consumers in towns and on the seaboard, to the exclusive advantage of the Western farmer.*

It is probable, I think, that the British Government will agree to the imposition of differential duties ; and as it is evidently to the interest of the Province that intercourse with England should be via Quebec, it may receive the royal assent. To encourage shipments and importations by this route, an address will be moved to the Queen on the subject of a line of ocean steamers between Liverpool and Quebec.

I hope, however, that the removal of restrictions which are of no general benefit to the United States, will prevent the adoption of either of the ulterior measures that have been proposed, the withdrawal of which, it strikes me, would be of more advantage to Canada than to the United States ; and I feel satisfied that if the attention of Congress were once directed considerably to the subject, the heavy duties on articles imported from Canada would be no longer imposed.—*Exchange paper.*

CONSISTENCY OF FREE-TRADERS.

WE take the following from one of the free-trade papers of the day, and recommend it to the careful consideration of our readers. We are here told that "the farmers and mechanics should be direct customers to each other," and that by so doing, they would relieve themselves from paying "the profits of a host of intermediaries,"—and that the farmer and the mechanic would thereby be enabled to grow rich ; and yet, the same journal is a warm advocate of the tariff of 1846, which is gradually closing the mills and furnaces at which the farmers and mechanics were enabled, under the the tariff of 1842, to effect their exchanges, and compelling them to make their exchanges at a distance of thousands of miles. The farmer of Ohio sees the neighboring furnace closed, and he mortgages his farm for the purchase of the iron of Britain, *whose whole purchases of our food will scarcely pay the interest on the debt we are now so rapidly accumulating ;* and this, according to one of the columns of our contemporary, is the way in which he is to be enriched, while in accordance with another column, he is to be enriched by bringing the producer and the consumer into closer connection with each other ! Such is the consistency of those who teach that freedom of trade is to be sought by aid of other means than full and complete protection !

PROTECTIVE MOVEMENT.—Some time ago, we mentioned the "Protective Unions," or associations among farmers and mechanics for their mutual benefit, which had already become numerous in several of the New-England States. They originated, if we mistake not, in Boston, and thence spread rapidly through the rest of Massachusetts, and thence into other States. *Their object is to make the farmers and mechanics direct customers of each other, without compelling them to pay from the produce of their labor the profits of a host of intermediaries ;* and they accomplish this object partly by barter, and partly by purchases at wholesale instead of retail prices. A plan is now under consideration for introducing this system, upon an extensive scale, at Weedsport, Cayuga county, in Western New-York, and a list of subscribers to it already includes the most intelligent and wealthy farmers of that region. Stock to the amount of \$10,000 is already taken, on which 10 per cent. has been paid. If this project succeed, hundreds of similar character will be established in the State, who will eventually unite in establishing in the city of New-York an importing and jobbing house, and a depot for agricultural produce and manufactured articles. These associations in New-England already have similar depots in Boston ; and if they succeed in New-York also, they will soon be established in Pennsylvania, and have their depots in Philadelphia.

Some will object to these associations as "socialism," and say that "socialism" means

"infidelity" and all kinds of mischief. But let us consider the subject rationally, without being blinded by frivolous or vulgar objections. So far as "socialism" means the union and co-operation of individuals and families, for the purpose of reaping the full benefit of their labor—and we have never understood it in any other sense—it means something worthy of universal support and encouragement. Common sense and common justice will say that the farmer should receive most, if not the whole price paid by the consumer for a bushel of wheat, and the shoemaker most or all of what is paid by the wearer for a pair of shoes. But under the present constitution of society, or rather the present constitution of trade, the farmer and shoemaker receive much the smaller portion. The remainder goes into the pockets of various *middlemen* or intermediaries, in the shape of wholesale and retail merchants and tradesmen and carriers. Beginning with a bushel of wheat, we find that the farmer sells it to the miller, who grinds and sells it to the wholesale dealer in the city, who sells it to the country trader, who carries it back to the region where it grew, and sells it to the shoemaker. The latter may pay seven dollars for a barrel of flour containing five bushels of wheat, while the farmer may have sold this wheat for fifty cents to the bushel. The difference is four dollars and a half, which is divided among all these intermediaries. If their number could be diminished, the producer would get more, and the consumer pay less. So the shoemaker sells his work to the wholesale dealer, who sells to the retailer, who sells to the wearer, perhaps the maker and wearer dwelling in the same town, while the wholesale dealer dwells one or two or three hundred miles distant.

Can the number of these intermediaries be diminished without interfering with the convenience of producers and consumers? Their total extinction would reduce the world to barbarism. But their needless multiplication "robs the laborer of his hire," and promotes that concentration of property, that aggrandizement of the few and impoverishment of the many, which has ever been the tendency of civilization, ancient or modern, and which is the source, in conjunction with bad government, of the manifold evils under which Europe now labors. The "*middlemen*," the numerous intermediaries between landlord and tenant, are the standing theme of complaint among English statesmen and political economists, to which they refer most or all of the misery that paralyzes Ireland. The same system prevails in commerce, and produces the same results, the robbery of the producer, the enhancement of price to the consumer, the concentration of property, the multiplication of paupers. Farmers and mechanics, the producers, are not so rich as merchants and traders, the intermediaries. The two former, while producing all luxuries, are comparatively restricted to necessities. The two latter, who produce nothing, are the greatest consumers of luxuries. The distribution is unjust, not because the latter are unnecessary, but because they are too numerous. These associations tend to correct, or at least to diminish this evil.—*Phil. Ledger*.

INSTANCES OF CATTLE FEEDING.—1. Lot 1st, 13 three-year-old heifers, mixed breed. Lot 2d, 7 three-year-old bullocks, mixed breed. Lot 3d, 9 three-year-old heifers, Hereford breed.

2. Lot 1st, soiled in yards during summer; put up to fatten 6th October. Lot 2d, ditto, ditto. Lot 3d, Put into open yards as soon as bought.

3. Lot 1st, tied up in stalls 10½ feet long by 4½ feet wide. Lot 2d, ditto. Lot 3d, in open yard, with shed to lie under.

4. Lot 1st, each beast consumes daily 70 lbs. raw Swedes, 2½ lbs. linseed-meal soaked in cold water, 2 lbs. barley-meal, and 8 lbs. straw chaff. Lot 2d, each beast consumes daily 90 lbs. raw Swedes, 2½ lbs. linseed-meal, soaked as above, 2 lbs. barley-meal, and eight lbs. straw chaff. Lot 3, put in the yard to freshen up for stalls, receiving a small quantity of turnips, with as much straw as they can consume, but no account taken of the quantity.

5. Little wheaten straw; no account taken of the quantity.

6. Lot 1st, estimated increase in weight by Christmas, 10 imperial stones; the value depends on the market price when sold. Lot 2d, increase in size more than the first, but not so forward. Lot 3d, going on very well.

7. As clean as hunters; very comfortable.

N. B. There are no cattle bred on this farm; they are all bought regardless of breed, endeavoring to buy what will pay best.—*English paper*.

I R R I G A T I O N .

Translated principally from the "Journal d'Agriculture pratique."

BY F. G. SKINNER.

[Continued.]

Means of Improving the Quality of Water.—Any water naturally unfitted for irrigation may be so treated as to be rendered useful for that purpose. Water may be unsuited to the growth of plants from three causes. It may be too cold, or, from a prolonged sojourn in a bed wanting inclination, it may be too warm; again, it may become stagnant and charged with principles inimical to vegetable life. As has already been stated, the collection of the water in reservoir until the temperature rises, is the remedy for the first evil; and motion communicated in various ways will correct the two last. The fertilizing power of a stream may be greatly augmented by placing in its bed a coffer, constructed of slats, which is filled with such manures and offal as can thus be disposed of. Patzig, who recommends this course, says a mixture of sheep's-dung and lime, thus used, produces the most astonishing results; moreover, says the same author, "Instead of burying the animals that die upon the farm, they should be thrown into this coffer, and the meadows will be thereby greatly benefited. In a short time a bluish-colored oil will be seen upon the surface of the water, which, deposited upon the sod, communicates to vegetation the most extraordinary activity. The solvent power of running water is remarkable, and much greater than is usually supposed, for at the end of six months not a trace remains of the carrion thrown into it; all, even the bones, are dissolved and carried off."

Action of Water upon Different Varieties of Soil.—Wherever water exists, a meadow may be created and grass grown, and though this is the case on all soils, the action of water is nevertheless subject to variations depending upon the surface upon which it is applied. Water nourishes and stimulates vegetation; it affords a protection from sudden atmospheric changes; and, finally, it delivers the meadow from many enemies, as well animal as vegetable.

Water Nourishes Plants.—Considered as a manure, (as has already been shown,) water contains mineral, vegetable, or animal particles, and occasionally all three. Water charged with any of these enriches by its deposits the surface over which it flows, but motion is necessary. The proof of this is, that the fertilizing action is much more apparent upon meadows of rapid inclination than upon those that are not. In this last case the water flows slowly, depositing only the grosser matter which it contains; while the finer particles, those the most favorable to vegetation, are lost, because there is not sufficient friction to separate them. Where the surface is too level, the water dwells upon it; a portion is absorbed, while the remainder is evaporated, not only without any beneficial effects, but acids are formed which destroy the valuable, and favor the growth of useless plants: this evil may often be remedied by increasing the quantity of water, as then from its own weight it acquires a swifter motion. If the grass should grow thicker and better along the edges of the trenches, the inference is, that the irrigation is imperfect, and the surface should receive more slope, that the action of the water may be extended to points more remote. Vegetation, however, to a certain extent, is always more active near the trenches; the water as it advances becomes despoiled of

its enriching ingredients, and the ground should accordingly be so disposed as not to irrigate too wide a space with the same water. When the quantity of fluid to be disposed of is small, as is generally the case when that from springs is used, the surface can scarcely be too much inclined, for then the effects of the water seem to multiply and extend much farther. If, where the quantity of water at command is small, the slope cannot well be too great, it is not the case where the supply is abundant; and due care should be observed in proportioning the quantity of water to the degree of slope, for much water flowing rapidly will wash away the vegetable earth and lay bare the roots of the grass.

Water a Stimulant to Vegetation.—It has been observed that the pores on the under-side of the leaves of such plants as grow upon irrigated land are larger than those of the same plants growing elsewhere. The inference is, that the first possess greater powers of absorption, and that irrigation increases their vitality, and renders them capable of taking in a greater quantity of the atmospheric gases.

Water protects and preserves Plants; for as long as water runs upon a meadow, the temperature remains uniform, and the ill effects of sudden atmospheric changes are prevented. Even where vegetation is overtaken by frost, it may be protected from injury by letting on the water before a thaw. Finally, water is an efficient agent in delivering meadows from destructive vermin and insects, such as mice, moles, grasshoppers, &c. In the same way, properly applied, it destroys the sedge and heath of dry, and the sour vegetation of cold, wet land.

These different effects of water are modified by the nature of the soil it flows over. Thus there is no soil better adapted to irrigation than that which is sandy; though naturally dry and sterile, it can with sufficient moisture be converted into excellent meadow, and this is probably the most profitable disposition to be made of it. Precaution, however, is necessary in watering sandy land, for if it be loose and shifting, it must be allowed, after being properly graded and seeded to grass, to stand a year before irrigation commences; otherwise the water will filter through the surface and re-appear in the lower trenches, oxidized and spoiled. It is bad economy to be deterred by expense from covering a sandy surface with grass. The quality of the grass is a secondary consideration; the main object is to *bind the sand*. Subsequent irrigation will soon change the nature of the growth, whatever it may be, and the finest herbage will supply its place. Should the sand be mixed with clay, even in small proportion, barely enough to give it some consistency, it may at once, without previous preparation, (other than grading,) be submitted to irrigation. Before a sandy soil becomes consolidated and well clothed with grass, it requires a great deal of water, and that which is turbid and muddy, as it usually is after rain, is best suited to it. An equal mixture of sand and clay makes the best meadow, yielding in quantity and quality the finest crops; it is improved by any water not naturally bad, and requires much less moisture than sandy land.

A stiff clay is not well adapted to "water meadows;" roots penetrate it with difficulty, and of all soils it is the most difficult to irrigate; very little water should be let on at a time, but the irrigation must be prolonged. A strong flow of water covers the surface with a cement which adds to the natural tenacity of the soil, and which becomes indurated, almost to the hardness of brick, on exposure to the sun. The best corrective in this case, where the means are at hand, is to add to the clay an earth of less consistency; the work will be facilitated and the vegetable growth increased. If, in grading

land for irrigation, it becomes necessary to remove the sod, (to be replaced when the grading is done,) there must be no precipitation in letting on the water; the sod must first be allowed to take root; else the water, running between it and the land, will prevent the roots from striking in, and the sod will perish.

Calcareous soils, being naturally warm and rarely retentive of moisture, are liable to suffer from drought, and for this reason they are peculiarly suited to, and are much improved by irrigation. Though almost any water is beneficial to them, that from springs is to be preferred, and they not only produce largely, but the hay is of the very best quality.

Preparation of the Soil.—Implements. In preparing land for irrigation, it is of consequence, as in every other agricultural process, that the implements and tools made use of should be the best of their kind. In agriculture, things seemingly of the smallest importance, though they contribute materially to success, are usually the last to occupy the attention of the inexperienced; and any imperfection in its various processes may generally be traced to a deficiency in, or neglect of the tools or implements employed; and for this reason, what otherwise might appear rather too minute a description of the several instruments and the manner of using them, in preparing land for irrigation, is here given. *The spade*, (fig. 2, *a*.) Notwithstanding the simplicity of this implement, it is always important, and indeed indispensable, and should occupy the first place; *b* re-

Fig. 2.

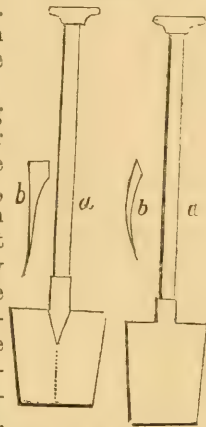


Fig. 2. presents the spade in profile. The curve is essential. This implement is not destined to turn up the earth, but to pare off the sod, to level the bottom of trenches, to cut by a line, &c. Except the handle (four feet long,) the whole is of iron, and the sides as well as the lower edge are kept tolerably sharp. The more spongy and mossy the ground is, the greater the necessity to keep the spade sharp, and as the implement is usually pushed forward by the pressure of the hands and chest, it requires a longer handle than those in ordinary use. Schwerz, from whom this description is borrowed, thinks it would be well (where the works are extensive) to have spades of different widths, to be used as the dimensions of the ditches and trenches may require. Where a single spade is used, it should not be wider than eight inches. Schwerz recommends still another, (figs. 3 and 4,) which he considers indispensable for lifting the sod, flattening the bottom of ditches, &c. The irrigators in the Seigen country do not attach as much importance to the spade as does Schwerz, and in its stead they use the shovel, (fig. 5.)

The round spade, (fig. 6,) though not mentioned by Schwerz, or used by the farmers of Seigen, will be found exceedingly useful. It is made of a single piece of wood, shod with a crescent (*x, y*) of steel, and is principally used for cutting the sod in lines by a cord. It may be as well to observe that in using it, it should not be withdrawn from the earth at every cut; on the contrary, it should be retained in the ground, pressed to the cord, and advanced by a circular motion one third of its length at each cut.

The crescent, (fig. 7.)—The round spade is best for the deeper ditches that carry off the water, but for the smaller irrigating trenches the crescent is pre-

ferred. The drawing is from the implement in use in Seigen. At the back of the blade a hoe is usually attached; this, though not essential, gives weight to the tool and effect to its blows. This hoe (fig. 8) may be used separate from the crescent. The crescent serves to cut the edges of the trenches, and

Fig. 4.

Fig. 6.

Fig. 7.

Fig. 8.

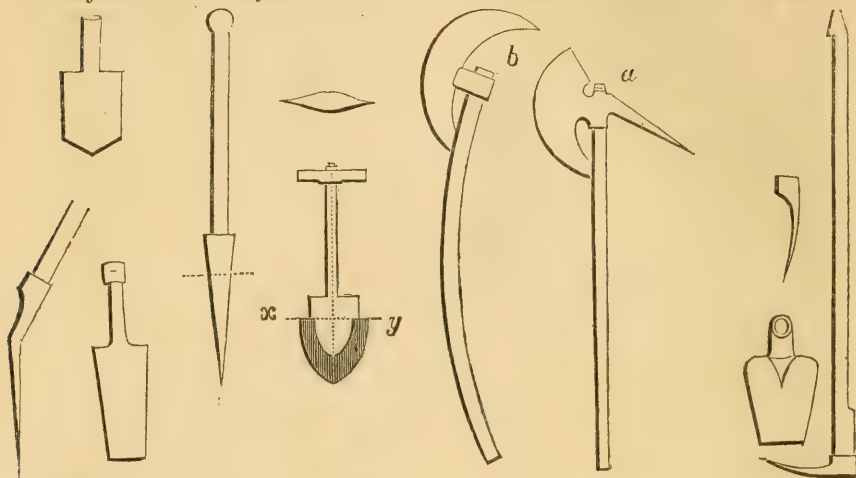


Fig. 5.

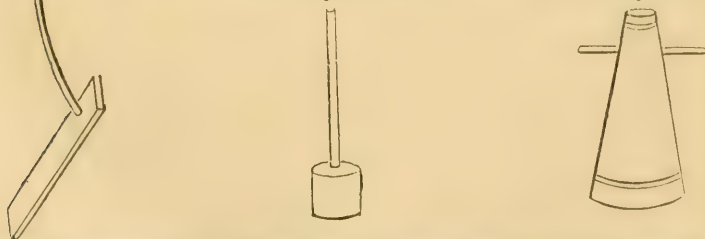
some skill is required for its use, as an awkward workman is very apt to cut the cord, which should always be used when straight lines are to be traced. When a trench is to be dug, the edges are cut with the crescent, and the sod between is taken out with the hoe. This operation is much facilitated when transverse cuts of the sod are made at short intervals. Fig. 7, *a*, *b*, are crescents with and without the grubbing hoe.

Fig. 9.

Fig. 9 is a flattening-board made of half-inch oak plank, as heavy as can be conveniently lifted, with a slightly curved handle. It is used for "patting" down the sod and loose soil. Figs. 10 and 11 are mauls to be used where the action of the levelling-board is not sufficiently powerful. For moving sods and soil to short distances the ordinary wheelbarrow should be used, and to avoid making ruts the tire should be unusually broad. The road-scraper is a val-

Fig. 10.

Fig. 11.

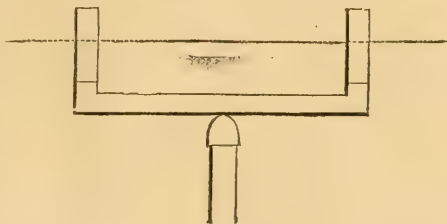


uable implement, but it should not be used to carry dirt more than 35 yards.

Levelling, or Grading.—Before cutting ditches or trenches, the surface should be levelled, in order to trace out the plan of the works to be executed. For this several instruments are required. First, the water-level, made of quarter-inch tin tube, a yard and a quarter long; the extremities of this tube are turned up at right angles, and are surmounted by glass tubes of the same

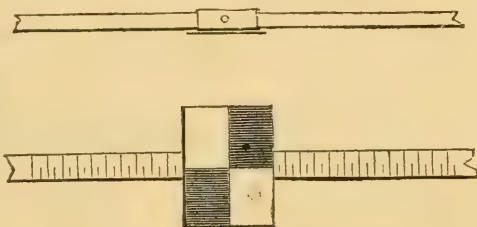
diameter a few inches long. (See fig. 12.) This tube is supported by a base that may be lengthened or shortened at will, like a common spy-glass, and a sufficient quantity of any colored fluid is put in it to rise half way in the glass tubes. When the surfaces of the fluid are exactly at the same height, a line drawn through them is horizontal. There are other instruments for levelling, but the above described is the cheapest, and will answer all ordinary purposes.

Fig. 12.



The levelling staff (fig. 13) is an indispensable adjunct to the water-level. This staff is three or four yards long, planed perfectly smooth down to two inches square, and marked off into feet and inches, or, what is better, tenths of a foot. Sliding upon the staff, and provided with a clamp or thumb-screw to fix it, is a

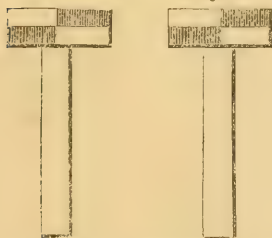
Fig. 13.



board five inches square, divided as in the figure. The central cross formed by the lines is the point sighted at in taking levels.

For short distances a much more simple instrument is used, the ordinary mason's level. The sighting boards (fig. 14,) three in number, are pickets four feet and a half high, with boards at the top, as in the engraving. Two extreme points being given, these boards serve to ascertain one or more intermediate

Fig. 14.

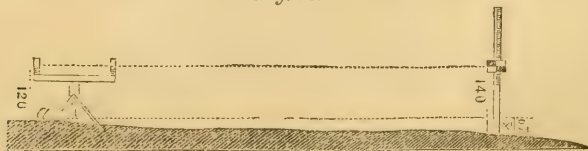


points on the same line, whether it be horizontal or inclined.

Besides the instruments above described, a surveyor's chain, a large square, stakes of different lengths, a maul, and gardener's line, should be provided. By levelling is understood the operation by means of which from a given point a horizontal line is drawn,

and which is marked off with stakes, or it determines the degree of inclination formed by the surface of the ground with the horizontal line, or, finally, it determines upon the ground the points through which a line will pass, the

Fig. 15.



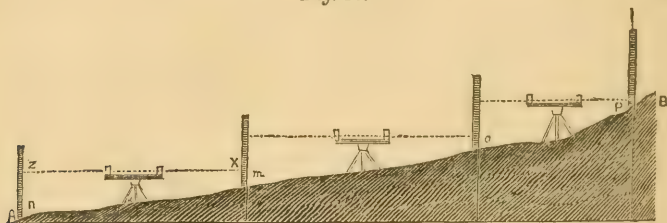
inclination of which is given. For long lines the water-level is used, but for short distances the mason's level is more convenient.

If it is desired to draw a horizontal line from a given point *a* (fig. 15) to

another point x , the level is placed at a , so as to sight conveniently at x . An assistant, standing at the point x , in obedience to signs from the operator, raises or depresses the board upon the levelling staff, until it is exactly at the height indicated by the water in the glass tubes. The height from the soil to the level of the water in the instrument is then measured and compared with that from the ground to the cross on the marking-board, and the difference indicates the depression of x below a .

If to preserve the inclination it becomes necessary to follow a very tortuous line, it may be avoided by sinking the ditch at certain points, and raising it by means of embankments at others. If the inclination between the points a and x is too great to be measured by the height of the staff, the distance must be divided into shorter lengths that can be measured. Thus (fig. 16)

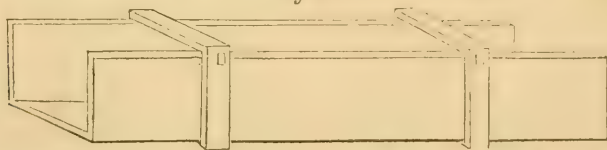
Fig. 16.



it is proposed to level the line AB , or rather to ascertain the elevation of P above n , but the point n is so low as to render it impossible with the level to sight to P . The level is then moved to the point a , whence it is easy to sight to n ; the point where the line of sight strikes the staff at n is marked. The level remaining in the same place, sight is then taken at m and the point of intersection also marked; a horizontal line zx is thus obtained, and the difference of the two heights is the exact indication of the height of m above n , and so in succession with the other lines. The heights of m above n , of o above m , and of P above o , are added together, and their sum is the height of B above A .

Dams.—It is not necessary here to give directions for the construction of dams; but it may be as well to observe, that whenever they can be dispensed with by prolonging the irrigating ditch a few yards, it had better be done.

Fig. 17.



Aqueducts are frequently required to convey water over or under streams. They should be constructed as in fig. 17, of two-inch oak plank.

[To be concluded in next number.]

EMIGRATION TO TEXAS.—On the 3d inst., the Universal Emigration and Colonization Company dispatched their first ship, the John Garrow, of 1,200 tons, for Galveston. The emigrants comprised 150 farmers, with more or less capital. An influential director of the company preceded them, to make preparation for their reception. The celebrated Indian traveller, Mr. George Catlin, sailed in the ship to enter upon his duties as superintendent. The second ship is to sail in October, and is already half full of her complement of passengers.

ENTOMOLOGY.

NO. II.

BY S. S. HALDEMAN.

CLYTUS ROBINLE.—In Pennsylvania, in the month of June, this handsome insect may be met with upon locust trees, (*ROBINIA PSEUDACACIA*.) in the branches of which they



Fig. 1.

lived as a larva. Its length (fig. 1) varies from half an inch to nearly nine tenths of an inch. The color is black, with transverse yellow bands, those upon the elytra being somewhat irregular. The under parts are varied with yellow, the legs are reddish, and the antennæ reddish brown.

The female deposits her eggs in the irregularities of the bark, and the young when hatched penetrates into the interior to feed upon the wood. The smaller branches are generally attacked, and the presence of the larva may be known by the wood-dust about the aperture where it entered, the cuttings being for some time ejected here. But the most prominent is the swelling of the branch at the point of attack, which becomes weakened, and is often broken off by storms, or dies, so that new shoots must be thrown out below. From these causes the tree becomes disfigured and materially injured. The annexed figure (2) represents a fragment of a locust branch attacked by this insect.

The same insect attacks hickory, and as the larva continues its depredations after the wood has been cut, it frequently does much damage; and we have known a large lot

of hoop-poles to be destroyed by them. The figure (3) represents a piece of one of these poles split to exhibit the burrows of the larvæ, and their place of exit through the bark. A plug of woody fibres is observable in one of the burrows, similar to those made by the *ELAPHIDION*.

Dr. T. W. Harris, in his "Insects injurious to Vegetation," states, on the authority of Gen. Dearborn, that the grubs of this species are full-grown by the 20th of July, and the perfect insects leave the tree early in September, in Massachusetts. From this it is evident, that as they appear at different times in various parts of the country, the proper season for cutting wood infested by them



Fig. 4.

must vary. Hoop-poles

should be cut before the eggs are laid, or they should be soaked some time in water. This would kill the larvæ, not only of *Clytus*, but of another and much smaller insect, which burrows beneath, and loosens the bark, and penetrates and destroys the wood of hoops, long after the barrel has been finished and applied to its proper use.

Dr. Harris recommends whitewashing the trunks of trees to prevent the insects from affixing their eggs; he also recommends catching the adults and drowning them in bottles of water by children—to be repeated year after year during the period of their appearance; but it is very evident that this cannot be extensively practised.

CLYTUS CAMPESTRIS of *Olivier*, (or *C. TERMINANS FABRICIUS*.) figure 4, is about three fifths of an inch long, of a dark brown color, the elytra varied with ashy down, and having two yellow quadrants near the base. The thorax is rough above, with four yellow spots in the corners, arranged in a square. The thighs are thickened towards the end. The perfect insect appears in Pennsylvania in May and June, and occurs from Massachusetts to Carolina and Mississippi. The larva does considerable damage to fallen chestnut timber, particularly that which is cut for fencing rails. The younger larvæ burrow between the bark and wood, but the older ones penetrate into the wood, forming holes which the rain can enter.—*Pa. Farm Journal*.



Fig. 2.



Fig. 3.

ON THE THEORY OF AGRICULTURE, AS FAR AS RELATES TO DRAINING.

THE following is brief and to the point. It is an extract from a lecture delivered in England by the Rev. Doctor Buckland. By-the-bye, we have often thought that our circuit and country clergymen would be still more useful, if they would qualify themselves to deliver occasional lectures on Horticulture, Agriculture, Natural History, &c. He who reads the following attentively, will gain as much as is sometimes gained by listless listeners to prosy sermons:—

The learned Professor then referred to the important operation of draining, as the foundation of all good farming. It was useless to put tons of manure on land that was not dry; in that case it would only float upon the surface, for wet clay would not allow it to go down—it was almost entirely thrown away. Draining rendered the land penetrable by water, and enabled the rain to descend freely through it, carrying to the roots those fertilizing elements of carbonic acid and ammonia, with which rain-water was always charged. Carbonic acid was continually supplied to the air from chimneys, and from putrefying animal and vegetable substances; also from the breath expired from the lungs of animals, and a hundred other sources; it floated in the atmosphere in a gaseous form, and was brought down again by rain. Falling upon drained land, this rain penetrated its surface, and, as he had just said, carried with it to the roots of plants two of their greatest elements of fertility. Fifty years ago, Parliament* had given a premium for draining to Mr. Elkington, and his system, where it was applicable, had answered the required purpose; but it was not applicable so generally as newer systems, for the publication of which the country was mainly indebted to Mr. Smith, of Deanston. He remembered, when returning from Scotland after visiting Mr. Smith's farm at Deanston four years ago, being taken by Sir Robert Peel into a field of his near Tamworth, which was almost swamped with water, and nearly unproductive. He advised Sir Robert to drain it after the manner of Mr. Smith, which he forthwith did, and the result was in the very first year a splendid crop of turnips, and the second year a crop of barley so luxuriant that the stalks could not support the ears, and fell prostrate to the ground. The expenses were repaid in two years, and this worthless field was now a most profitable piece of land. The Rev. Doctor then mentioned another instance of the effect of drainage near Wolverhampton, in Staffordshire, by Lord Hatherton. His Lordship had reclaimed a wild tract of 1500 acres adjoining Cannock Chase, on hills higher than those in East Devon, and had increased its value from 5s. to

* When did *our* Parliament ever give a premium or medal for any improvement in an industrial pursuit, or for any thing except *successful and copious shedding of human blood in war*? The members of Congress are entitled, or rather entitle themselves to take, and we believe (but are not sure) to pocket, if they do not take, newspapers to the amount of some *thirty* dollars each. For each *agricultural* newspaper taken by them Uncle Sam would have to pay fifty cents—perhaps one dollar! Now it would be curious to see how many, or rather how *few* agricultural papers they select. They are ready enough to *supplant* agricultural papers, by distributing the scraps gathered at the Patent Office, but how many do they patronize? Most of them take not one, even when they can do it at the public expense. All go for their *party* papers! And were Mr. Ruffin, the author of the great work on Calcareous Manures, to present himself at the door of the Senate Chamber, on the inauguration of the President, or any other public occasion, he would not be allowed the privileges enjoyed by the lowest commissioned officer of the army or navy—so politic does this republican government consider it to reserve its distinctions for men whose employment is to carry swords and muskets, while the most eminent civil virtues are stigmatized and proscribed as parties rise and fall.

25s. per acre. After impressing thus forcibly the importance of draining as the first step in agricultural improvement, the learned Professor proceeded to remark on the application of manures. As the elements of manure could only act on plants when in a state of solution, it ought never to be applied as a top-dressing, except in wet weather. It was common to see manure applied to turnips during the dog-days, when the sky was bright and clear, and not a particle of rain falling. In this case, so far from the manure doing any immediate good, its ammonia was speedily evaporated, being extremely volatile, and passed into the atmosphere, instead of to the roots of plants. In a dry season, if manures were used at all, they ought to be buried in the ground, and not applied as a top-dressing; in rainy seasons the virtue of manures descended with the rain-water, to the immediate benefit of the growing plants. There were two advantages to be derived from draining, which were—time and money. He who was always behindhand could not be a good farmer. The early farmer takes his commodities early to market from well-drained land, which is fit to be worked at almost any time, and has threshed his barley, and converted it into cash, while the late farmer's crops are not yet ripe for the harvest. No farm on a wet clay soil can produce half the corn it is capable of growing if thoroughly drained. Referring to different kinds of manure applied to land after it was prepared by drainage for receiving it, the Professor observed that he need hardly say that the best of all manures was farm-yard dung, though he was sorry to remark the farmers did neither produce nor preserve so much of it as they might easily do. Farm-yard dung was the best of all manures, because it gave back directly to the soil the elements of the plants that had been consumed by cattle as their food. But, besides the manure produced on his own land, the good farmer is obliged to borrow and fetch from a distance the elementary substances of imported artificial manures. The farmers of the east side of England go to London for bone-dust, and to Holland for rape-cake and oil-cake. This oil-cake, together with straw, is used for the winter food of oxen in their farm-yards, which are thus annually charged with an abundance of rich manure.

TOBACCO.

THE TOBACCO INSPECTION WAREHOUSES IN NEW-YORK—APATHY OF PLANTERS—CANADA
RECIPROCITY BILL.

A VISIT to the New-York Tobacco Inspection Warehouse fronting on the East River, under the management and supervision of the proprietors, Messrs. Pearce and Jarvis, prompts us to say that, as connected with an important branch of agricultural industry, the buildings are large, substantial edifices, covering twenty-four lots of ground, and are some five or six stories high. They are capable of storing about nine thousand hogsheads of Kentucky or Virginia tobacco, and the arrangements for examining, sampling and conducting the business seemed to be perfect in every particular. Mr. Pearce, the senior partner of the concern, is a Marylander, and for many years was extensively engaged in the tobacco trade from Baltimore to Europe, and resided for some time in Germany, for the purpose of perfecting his knowledge of that trade, and in attending to the interests of a house he was connected with in this country. About fifteen years ago, he was induced to remove to New-York, for the purpose of aiding a gentleman of considerable enterprise in establishing an inspection, which was got up under many disadvantages and sacrifices, but which has proved to be eminently useful, popular and conducive to the convenience of all who are concerned in the vending and purchasing of leaf tobacco, the trade in which is every year increasing and growing more important.

Although the inspection and warehousing are not now regulated by any legal enactments, and consequently, not compulsory; yet all the tobacco arriving at the port for sale is regularly sent to the establishment, where it is sampled or inspected, weighed and marked with care and accuracy, and

stored until called for by the manufacturer or shipper. The merchants, we understand, find this a safe, cheap and satisfactory mode of managing this important article of their trade; and the establishment has now become indispensable in facilitating its operations.

The tobacco received annually varies from nine or ten to twelve thousand hogsheads, principally the growth of Kentucky and Virginia; more than one half of which is taken out for home manufacture and consumption, and the residue exported to various parts of the world.

It is somewhat remarkable that the Maryland planters have not, as we are told, turned their attention, if only in the way of experiment, to the New-York market for the sale, in part, of their tobacco, which is suited for shipment to those countries in Europe with which so important and extensive a trade exists. It is believed by many that if an agency or agencies were established in that great commercial metropolis of the States, for the sale of Maryland tobacco, the highest prices would be realized. Baltimore seems to have monopolized the entire trade in Maryland tobacco, with what advantage to the grower he should best know. The greater the competition and the difficulty of combination among purchasers, the better for the planter. But, unfortunately, instead of a policy that will compel the consumer to go to the producer, to ask what *he will take*, the whole policy of our government, and the whole tendency of "free trade," as it is understood, is compelling our producers to go to foreign manufacturers and consumers, to say and to ask, "Here, sir, I have brought all my produce to your very door, until the toll and charges have nearly eaten up the grist. Pray, my dear sir, tell me *what you will graciously give me* for what remains, and let me go home, to come again next year and place myself in the same predicament."

Here, while the British are levying on American tobacco duties to the amount of some \$15,000,000 or \$20,000,000, Canada is asking, through her agents and ministers, only to open our gates wide enough for the free admission of her wheat and corn; and what says the American planter? Not a word—dumb as an oyster! even giving consent, as far as silence can do it; and were Major Jones, or some committee of agriculture, even to hint at the humbuggery that is going on, they would be forced to strike it from their report, as being a *political matter!!!* on which clodpoles have no right to express an opinion. As if men associated to guard the interests of agriculture were not bound in all their deliberations to despise the narrow and sordid calculations of political demagogues, of whatever party, and to watch for and defend themselves against the *wiles* as well as the force of foreign powers. But it is understood that the British Envoy's—entertainments are magnificent; and then he's—*so courteous! so condescending!* Ah, what a wise—what a proud people we are! so vigilant! so self-respectful!

We learned that the receipts of the last year (1850) at the New-York warehouses were nearly 14,000 hogsheads, and that the stock on hand at the inspection on the 1st January, 1851, was 6,300 hogsheads. The deliveries in 1850 for home consumption and exportation to foreign countries, amounted to 13,500 hogsheads.

TO KILL LICE ON CATTLE.—Some recommend to kill them with mercurial ointment, but that is dangerous. Better sprinkle wood ashes; but as prevention is better than cure, the best thing is *good keep*. Bad keep is the disorder of which lice are the symptom and the fruit.

COST OF DIFFERENT MODES OF TRANSPORTATION.

THE *Journal of Commerce*, printed at Louisville, Kentucky, contains the report of an address upon Railroads, delivered by Mr. Robinson, at the court-house in Lexington, on the 8th instant. The speaker institutes a comparison between the cost to the farmer of different modes of transportation in getting his produce to market. For this purpose he inquires into the expense of marketing fifty tons at a point one hundred miles distant, along a turnpike and a railroad. He estimates the cost where the latter is used, including the personal expenses of the farmer in going with his crops to dispose of them, four times a year, at \$165, having previously calculated the expense of marketing the same quantity by turnpike at \$850; and then proceeds:

"Deduct this \$165 from \$850, the cost of the farmer along a turnpike, and we have a positive difference of \$685 in favor of the farmer along a railroad, and against the farmer along a turnpike. The sum of \$685 will pay the interest, at six per cent., (which, I believe, is legal interest in Kentucky,) upon the sum of \$11,400; consequently, the farm along a railroad is worth just \$11,400 more than a farm along a turnpike, supposing all other things to be equal.

"If such is the difference between railroads and turnpikes, what must be the difference between railroads and common dirt-roads, where the cost of transportation is double the cost of the same work upon turnpikes. I was informed a few days since by one of the wealthiest and most intelligent farmers in Mason county, that he paid last winter twenty-five cents per hundred, or five dollars per ton, for transportation of hemp eighteen miles. This will amount to over thirty-one cents per ton per mile, or more than double the cost of the same service upon a turnpike.

"Supposing the statement I have just read to you to be a correct one—and I believe it to be such—then *the land of the farmer who has a railroad, and is one hundred miles from a market, is worth just as much per acre for agricultural purposes as is land of the same quality upon a turnpike, nineteen miles from the same market; and is worth just as much as is land of the same quality situated upon a common dirt-road, (such as you have in Kentucky,) nine miles from the same market.* This, gentlemen, is one of the reasons why railroads are of benefit to the farmer. This is one reason why his land is increased in value. There are other reasons of fully as much importance. The farmer can send to market articles by railroad that it is impossible to send by wagons and turnpikes. He can send bark, wood, ship-timber, shingles, staves, lumber, honey, butter, &c., and a great variety of articles he cannot dispose of otherwise. The same benefits, in a less degree, accrue to the farmer, in the shape of the decreased cost to him of the articles he must buy for his own use; such as salt, sugar, iron, teas, coffee, clothes, &c., and, in fact, of all articles he uses, that he does not raise.

"Salt is worth in Paris or Lexington fifty cents per bushel, iron five to six cents per pound, coal twenty cents per bushel. These same articles can be purchased in Maysville at thirty cents for salt, three to four cents for iron, and five to six cents per bushel for coal. The increased cost to you here is simply transportation, as the merchant here charges the same per centage in profits that the merchant in Maysville does. With railroad communication, your salt and iron would cost you but a trifle more than it would in Maysville, and your coal would cost you ten or eleven cents per bushel, instead of twenty to twenty-one cents, as is at present the case."

After making some remarks upon the advantages of transporting live stock by railroad over driving it to market, Mr. Robinson proceeds:

"Your counties are now forced into the stock-raising business. They cannot raise grain and transport it to market, as it costs you more than you get for it. You are obliged, therefore, to feed it to stock and work it off, as it is the cheapest way in which you can get the grain you now raise to market. Build your railroads, and you will find grain-raising much more profitable to you than stock-raising, and will, therefore, raise grain instead of stock, while stock-raising will pass off to more remote and less favored regions.

"Railroads create a revolution in your products, for the simple reason that it is more profitable for you to raise other products after the roads are completed, than is the case before they are built. In illustration of this, I will call your attention for a moment to the workings of the great New-York and Erie Railroad, in New-York State. Prior to the construction of this road, the farmers in the counties nearest New-York, upon

the line of road, raised grain and butter—every one has heard of Orange county butter.

"As soon, however, as the railroad was opened through these counties, the farmers discovered they could make more money by sending other articles to market; or rather by sending their products in a different shape; and the consequence is, that now, instead of sending grain and butter, they send milk to New-York. This road brings daily into New-York nearly one hundred thousand quarts of milk; much of it is brought a distance of one hundred miles. The farmers there found out that the products of their farms were worth more in the shape of milk than in any other way; and it has proved itself to be twice as valuable to them in this shape than in any other. The consequence is, that the farms in that region of country have increased in value from \$40 and \$50 an acre to \$100, and even \$150 per acre; while the farms still more remote from New-York, say two hundred and fifty or three hundred miles, which, before the construction of the road, were worth from ten to fifteen dollars an acre, now readily bring from fifty to seventy-five dollars per acre."

It does not concern us to inquire whether the above calculations are strictly accurate or not. The result to which they lead is one that has been verified by the experience of every region in which improved modes of transportation have been substituted for inferior. The whole saving, in the cost of getting the produce of the land exchanged, has been added to its value. Nobody has been injured by the process, but everybody has been benefited, for the cost to the consumer is not increased. Agriculturists are beginning to appreciate their interest in bringing themselves into proximity with their customers, by facilitating and cheapening the cost of their going to the latter. It is a strange thing that they will not take another step, and accomplish the same end by bringing the consumer to them.

The cost of a railroad of one hundred miles in length is cheaply estimated at two millions and a half of dollars. The amount of its advantage to the occupiers of the land lying upon it, is that it reduces the effective distance of each of them from market in the proportion of one hundred to nineteen, as compared with the turnpikes which we may suppose to have previously existed. The most distant upon the line has for all financial purposes moved his land to within nineteen miles of the point where its products must be sold. But it is plain that this advantage diminishes, as we recede on either side from the line of the road, in the inverse proportion. The farmer living off the track can compete with him at its extremity only by keeping within such a line that the distance which crops have to be hauled by team increases but nineteen hundredths of a mile for every mile that the railroad transportation is diminished. This being the case on each side, it follows that the effect of the railroad is summed up in the statement that it has made a parallelogram one hundred miles long and nineteen broad, of the same value as the nineteen miles square, immediately surrounding the market, previous to its construction.

The amount expended in the construction of one hundred miles of railroad would pay for the erection of twenty-five manufacturing establishments, costing one hundred thousand dollars each. It would have made twenty-five mills capable of working up two thousand bales of cotton each per annum. It would have made three times that number of furnaces, each of them capable of producing five thousand tons of pig-iron per week. If we suppose it divided equally, we should have fifty mills and furnaces scattered over a surface of nineteen hundred square miles—one to every thirty-eight square miles—about the size of an ordinary township. This would bring every producer within seven miles of a market, and reduce his expense of transportation, as compared with the reduction effected by a railroad, to less than one third.

But the question may be started in respect to the extent of such a market. This there is no mode of estimating, for it constantly increases. The operatives who work in the factory or mill draw about them those who make their clothes, their shoes, and minister to every other want except that of food. Each of those who comes for that purpose brings with him wants of his own, which require the services of still fresh artisans, and all of them must be fed, and clothed, and housed, and kept warm by the labors of the neighboring farmer. The progress is in a geometrical, and not simply an arithmetical ratio; and the only way in which a proper conception of its rapidity can be obtained is by watching the growth of the villages which cluster about manufactories.

Those who have seen, or in the South are now witnessing, the wonderful effect of such towns upon the surrounding country, will have no difficulty in believing that the market which one of them supplies is better and surer than that small share in a distant though larger one which is available to the man who has to go a hundred miles to reach it, and meet there the cultivators of a circle of twice their diameter.

But we had no further purpose than to accumulate testimony to the general proposi-

tion that all the freight of agricultural products is a charge upon them, and upon the land which bears them. It follows from this, that a recommendation to the farmers and planters to depend upon foreign markets is equivalent to asking them to keep their lands at the lowest possible value to which they can be reduced.—*Republic*.

THOUGHTS AND FACTS.

Stall-feeding Cattle.—In a valuable work on practical farming, the writer (Hillyard) says : Beasts should increase in the first month sixty-four pounds, second, eighty pounds, and the last fortnight forty-eight pounds. James H. Leigh, an English farmer, gives a very minute account, embracing every particular of stall-feeding—eighteen Durham bullocks and ten Durham cows for ten weeks from 11th November. One bullock died of pleuro-pneumonia in the last week.

The average weight gained by the twenty-seven beasts in five weeks was two hundred and eleven twenty-sevenths pounds, at a cost of \$17 60 each.

The feed was daily :

4	lbs. oil-cake,
4	“ barley meal,
10	“ cut oat straw,
20	“ turnips,
2	“ hay, at night.

He then took in hand sixteen Scots and Welsh bullocks, one Durham ox, one long-horned heifer, and twelve cows and heifers, from the 5th of July to the 21st of April ; the average gain of each beast was three hundred and three and twenty-one thirtieths pounds, at a cost of \$22 32 each, in ten weeks and five days. The regular feeding was commenced the 3d, but they were not weighed until the 5th of February. In each case every beast was weighed weekly, and every item of his food every day !

The English agricultural books abound with experiments equally extensive and exact. What would prevail with our American farmer to take the same pains ? Would a silver goblet ? How much easier to say a thing was as big as a lump of chalk !

Well, says the reader, what's the value of this information ? Why, it's worth the space, if only to inform those who never even guessed at it, how much a bullock ought to gain in a given time. How without occasional experiments can the farmer tell the *cost* of his meat per pound ? He knows what he gets, but does he know *whether it will pay* ? And without knowing that, may he not be *sold out* before he knows what hurts him ?

The Habit of Guessing.—To show how many men go through life guessing at every thing, at the last Maryland Cattle Show an old and most respectable farmer was in attendance, exhibiting some of his cattle. Mr. Patterson's two yoke of superb Devons were passing at the moment, and we asked the respectable old gentleman *how much* he supposed the two yoke *could* haul, on level, smooth ground ? “ Why, he did not know—he reckoned they could haul *a ton* ! ” When we told him we had no doubt, from what we had seen in New-England, that either yoke *could* haul *three tons on hard level road*, he was doubtless amazed at our credulity, or something worse. Thus it is that farmers go through life without appearing to be sensible that if they

would read, reflect, investigate, think, they might be adding every day to the stock of useful knowledge, *in the very line of their business.*

How to make Animal and Wooden Machines.—Reader, do you wish to know? We'll tell you. *Make time valuable—enable men to sell their labor high!* How is that to be done? By drawing men close together and diversifying employment. Thus you create demand for labor, and when a man's time becomes valuable and in proportion as it is valuable, he will seek to work with the most perfect machinery. He can't afford to follow a bad plough, or to drive weak animals. To turn his time (which to him is money) to the best account, *all his accessories must be of the best.* His horses must be fast and strong, his oxen must be powerful, and he must *know their power*, that he may task it to the full; for he knows and feels that he must accomplish the most work that is possible in the shortest possible time. The less employment is diversified, the cheaper the labor, and the less important that the tools and implements should be the most perfect that can be. How long could the farmer stand upon his legs in New-England who would know no better than to estimate one ton as a load for two yoke of large oxen?

Hence it is in New-England, where the loom and the anvil are near to the plough and the harrow, you see all the implements and appliances so perfect—houses, railroads, oxen, wagons, horses, roads, bridges, fences. If you want to see bad roads, bad gates, bad carts, poor horses, little oxen, slow men, imperfect machinery, ragged harness, slow driving, go where all are at one pursuit—where, therefore, men scatter and lose the power of combination—where, in a word, time is of so little value and labor so *cheap* (regarded by some as a blessing) that men can afford to work with bad and imperfect machinery, and where, consequently, every art and every industry declines. Ample reward to labor is another word for a prosperous country—cheap labor is a curse. The ragged Hindoo works for two sous a day!

JOHN BULL'S LAST CATCH-PENNY.

FROM the outset we have cautioned our readers against having any thing to do with John Bull's last contrivance for the maintenance of a system which looks to increasing the number of *middlemen*, by separating the producers of the world from the consumers of the world. The great Exhibition—the World's Fair—was a trap for catching pennies, having for its object the filling of the purses of the people of England, at the expense of the rest of the world, and thousands of our countrymen have fallen into it, having incurred large expenditure for the purpose of aiding in the occupation of the space assigned to this country within the walls of the Crystal Palace. What success they have had in conciliating the good feeling of John Bull, may be seen from the following paragraph, which we take from the *London Times*:—

What idea of Jonathan is to be gathered from his "notions?" And can we detect in the offspring the lineaments of its parent's face? England is not given to boasting and swaggering; she generally understates her strength, and studies moderation of language about herself, though she has some excuse for being proud. Her republican progeny are not so modest, if one may judge from the wings of that very aggressive American eagle with which the eastern end of the nave is decorated. The king of birds is hovering over a set of "notions" spread out very sparsely beneath him; and the visitor is somewhat astonished to find him making so vast a demonstration over a space so unoccupied. The American department is the prairie-ground of the Exhibition, and our cousins, smart as they are, have failed to fill it. They cannot yet keep pace with the great strides of

European industries, and even the seven-leagued boots, if they had them, would not enable them to do so, for some generations to come. *They are growing, however, and will be a great community by-and-by. Let them, therefore, await the future with patience and humility.*

In obedience to the commercial laws of England, we are daily closing our mills and furnaces, and daily diminishing our power to compete with her in supplying the world with cloth and iron, and our reward for all this is, to be told that we shall be "a great community by-and-by," but that we must content ourselves for the present with "patience and humility." Assuredly, the world has never yet seen a nation that wasted its resources and prevented the growth of its power, to the extent that is now being done by the farmers and planters of this Union. They richly deserve, as we think, to be taught a lesson of "patience and humility," and it *will* be taught as soon as we shall have sufficiently supplied the markets of Europe with our certificates of debt.

ON THE CULTIVATION OF TOBACCO.

[Concluded.]

OF STRIPPING AND PRIZING.

STRIPPING is begun as soon after the plants are thoroughly cured and seasoned, as the convenience of the planter will permit. It is taken off the sticks in proper season or order, and packed in a large bulk for this purpose, and generally in higher order than is proper for prizing, which enables the strippers to handle it with less waste, and to tie it more neatly. There are two facts generally believed to exist, in relation to the order of tobacco, which are unaccountable. One is, that tobacco, *in order*, or in a moist state, is no heavier than when dry. The other, that if it is taken down and bulked, as it is going out of season, that is, as it is passing from a moist to a dryer state, it will return in the bulk to the highest state of order it had previously acquired. These opinions, however, seem to have been established more by prescription than recent experiment, for I can find no person that will absolutely assert the facts upon his own experience. But be it as it may, the latter fact is so generally believed as to be attended to in bulking tobacco.

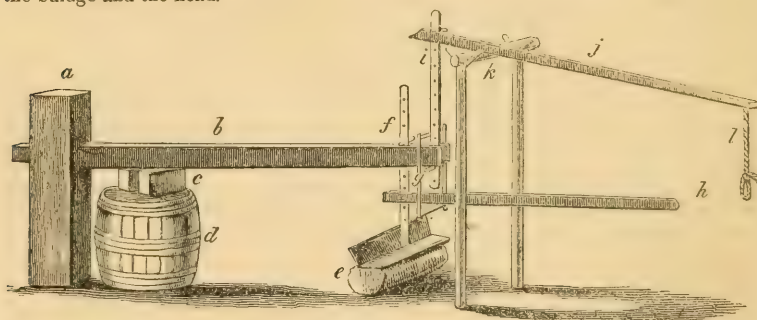
In stripping, the best planters make two qualities besides stemmed. For this purpose, every plant passes through the hands of the sorters, (the most experienced and judicious of the laborers,) who pull off the two first, or ground leaves, without looking. Upon examination, the remainder of the plant may be found fit for the first class; perhaps two more leaves are to be taken off, or perhaps the whole is only fit for the second class. In this way the first class is obtained, the leaves previously pulled off are again sorted for the second class, and what is unfit for this is stemmed.

No definite idea of the quality of the different classes can be well conveyed by description. It can only, and soon will be, acquired by observation and experience. The bundles of each consist of four or five leaves neatly wrapped around the head with another leaf. The stemmed tobacco (about two thirds of the stem only are taken out) is tied in large bundles, and when packed in the hog-head for pressing is untied and laid loosely, but in straight and uniform layers.

After stripping, some planters hang up their tobacco again upon sticks drawn smooth and somewhat to a feather-edge, and as it comes in proper order for prizing it, is taken down and bulked, and closely and effectually covered till the time of prizing arrives. The months of April and May are thought the best time for this. Others pack their tobacco in double winrows, that is, slightly lap the tails of the bundles, placing the heads on the outside, and thus raise a bulk of three or four feet in height. It remains in this situation well weighted, but oftentimes without cover all the winter, and perhaps gets completely dry; but returns in proper order for prizing in the warm weather of April and May. It is a matter of much doubt and dispute, which of these two modes is the best. Perhaps the latter is to be preferred, because it is the least trouble, provided the planter has plenty of house-room, and can so order it as to leave the winrows entirely free from interruption. Other planters, more careless, carry on the operation of stripping and prizing to

gether, without due regard to the order of the tobacco, which may account for the excess of inferior qualities, and diversity of prices exhibited in our markets.

Prizing is the last operation, but not the least important in the care and attention it requires. The size of our hogsheads is prescribed by law. They must not exceed four and a half feet in height, nor thirty-six inches in the diameter of the heads. In these we generally attempt to press 1500 pounds, but we oftener fall below than go over it. The average is perhaps not more than 1350 lbs. Our prizes are of the cheapest and simplest construction, generally fixed by the laborers who use them, and not exceeding two or three dollars in entire cost. The stump of a tree is generally used, instead of a post in the ground, until it rots, and the hogshead is protected by a temporary shed, or a light portable roof straddled across the beam. I subjoin a sketch of the one most commonly used. This you will observe operates by an unceasing suspended weight, capable of being increased by the addition of stones to any required extent, and which is suffered to settle gradually to the desired point, by which all danger of bruising from sudden and violent pressure is avoided. The important points in prizing are, to pack the tobacco neatly, in straight and regular layers. This is best done by putting in only one bundle at a time, pressing and squeezing it closely through the hands as it is done, to make it occupy less space, by which it will exhibit a better appearance when it is opened for inspection. To make it descend always on a level in the hogshead, by never suffering the beam to be depressed below a horizontal position, and to cause the tobacco in prizing, not to leave the inside of the hogshead, which can only be effected by having different sets of press boards, corresponding to the different dimensions of the hogshead between the buldge and the head.



A the stump or post, c the blocking, d the hogshead, f the sword connecting the weight e to the first lever b; the second lever h is applied to the first by the frame g; by pulling the rope l, the sweep j, working on the gallows k, raises the lever b, as the sweep and first lever are connected by a sword i. If the weight put in e is too great to be raised by the power applied to the second lever h, the design of the sword f, not being fixed in the ground, would be frustrated; the weight, however, may be readily adjusted to your power by putting more stones in e, or taking some out of it.

DUTY ON IRON.

The Baltimore Republican, a Democratic paper, says:—

There are doubtless many articles which will bear heavier duties than those levied by the present tariff, without diminishing the revenue, but on the contrary increasing it. If so, we see no impropriety in raising the duties. Iron, at its present foreign value, will bear a duty of sixty per cent. without diminishing the revenue from it; but if the home value be substituted, thirty per cent. is as much as it will bear. If the foreign valuation be adhered to, we think that the duty on iron should be increased to sixty per cent. whilst it continues to sell at the present low rates in England, with provisions for decreasing the duty in proportion to the rise of its price. This sliding scale of ad valorem duties we think far preferable to specific duties, as the latter taxes a common article at the same rate that it does a costly and valuable one. In increasing the duties on certain articles, with the view of increasing the revenue, instead of shutting out foreign competition, we see no departure from the Democratic platform.

PEAT-CHARCOAL AND MANURE.

PEAT-ASHES, WOOD-ASHES, SOOT.

I HAVE been in the habit of using all these for the last twenty years, to the great benefit of all sorts of plants; but if we could purchase this peat-charcoal mixed with night-soil, how much more beneficial it would be, even to gardeners. To the farmer it will far surpass guano in its fertilizing properties, and being of easy carriage, it can be sent to the remotest part. As for the expense, I hesitate not to say, from the millions of tons lying waste, both in Ireland as well as Scotland, that the price per ton on the ground where it will be burned would amply pay at ten shillings per ton—nay, more than pay. There is ten times more peat found above, than coals underneath. I know one estate in Scotland where several hundreds of acres are covered with solid black peat, varying from ten to twenty feet deep, containing millions and millions of tons, belonging to Sir David Dundas, the Judge Advocate-General. Therefore, I think, I have made out a good case to prove the cheapness, that in time it can be bought where it is charred. We all know that there is a deal of labor in bringing the coals to the pit's mouth, and still they are sold for the low price of from 8s. to 12s. per ton there. No one, as yet, can at all arrive at the mighty benefits that Mr. Jasper Rogers's mixture will do—which I shall christen, "Rogers's British Manure." In the first place, it will be a mighty benefit to the poor in those districts where the peat is charred; it will also be of great benefit to the landlord; it will also be very beneficial to the health of the country to have the peat districts drained, (as attention is sure to be paid to that, on account of the value of the hitherto valueless peat;) it will employ many hands in the shipping interest—as well as when it arrives at the various coast towns. No one can make any calculation of the benefit it will be to thousands, even before it is put on the land; and no one can have a doubt of its value, as a first-rate manure, afterwards. For instance, look at what a poor farmer has to pay, in remote districts, where he is far removed from towns, for a wagonful of solid rubbish, (all the ammonia, all fertilizing matter gone,) and a whole day lost, with a man and three horses, in bringing this load of delusive and high-priced rubbish home—and a pound paid for it in the first instance. Farmers, with free trade in full operation staring them in the face, cannot stand this any longer; therefore, great praise is due to Mr. Rogers for bringing this valuable mixture before the public in such a spirited way. The next point to be considered is, how is the manure to be made? As far as I have read the plans for the drainage of London, in the *Daily News*, none of them, in my opinion, will answer, on account of the enormous expense and difficulties to encounter, and having their works at different points instead of one. It is well known to every one that the Thames is the lowest part, and the only course to carry off all sewerage; therefore, I should simply advise sewers to be made on each side of the river. The north sewer could not pass any farther down than London Bridge, where I would carry several iron sewers across the bed of the river, and empty into the south sewer; the south sewer following the river's course, and striking off for Plumstead Marshes, where the works and reservoirs could be formed; a canal then cut to allow the clear water to run down to the river, as well as to allow the peat-charcoal to arrive at the works, and there mixed. The charcoal, being dry, would at once absorb and take up all the gases and the moisture of the solid, and would be very little trouble in the drying process. But there are hundreds of towns and villages where the charred peat would be used in the open privies and dunghills, and would at once absorb all those valuable gases for the land, although highly deleterious to the air when allowed to escape; therefore, I hope that Mr. Rogers will meet with that support which he so justly deserves from Great Britain, well knowing how difficult it is to surmount the prejudices of even those to whose after-benefit it will be sure to do good; hoping the press, in general, will see the great benefit that the above splendid manure will be, not only to the land, but the laborers, and the country at large.—James Cuthill, Florist, Camberwell.

[Mr. Cuthill, in a note accompanying his paper, dated 21st instant, says: "Should you mention the Irish peat-charcoal again, don't forget that letter of mine, which you published in the beginning of the year, to Mr. Smith, of Deanston." (See *Scottish Agricultural Journal*, No. 1, in which he alludes to vast quantities of peat-bog in the island of Lewes, from one to twenty feet deep, which he suggests should be burned in heaps, along with sea-weed, shell-sand, &c., after the manner of burning bricks.) "I am now giving the Irish peat-charcoal, mixed with night-soil, a trial; and you may depend upon it, that the two combined is far surpassing guano. I have strawberry plants in pots;

geraniums and many other plants growing luxuriantly, with a small quantity of the mixture in each. But the plants, in this mixture, are finer plants than the others, and have much finer roots. Even peat-ashes are valuable, as mentioned in my letter to Mr. Smith, in your paper. I am using charred peat, ever since Mr. Rogers's lecture at the London Mechanics' Institution, down the privy, and have not been annoyed, in the least sense by smell.]—*Scottish Agricultural Journal*.

DIRECT IMPORTATIONS.

WE learn that the principal importing merchants of Charleston will, this summer, go to Europe, and lay in their stocks for the coming season, to be imported direct. It is a good beginning, and will, we doubt not, find imitators in other Southern cities, as well as meet the sympathy and support of the Southern people.—*Charleston Mercury*.

How much better would it not be for the people of South Carolina to determine to adopt measures that would enable them to import machinery, for the conversion of their cotton into cloth, to be tended by spinners and weavers who should consume home-grown food, thus giving them a direct trade with the consumers of cotton goods throughout the world, instead of limiting themselves, as now, to supplying British spindles and looms, tended by persons who consume Polish and Russian food, and wear the cotton of India!

BEAUTIES OF THE COLONIAL SYSTEM.

WE have had occasion frequently to call the attention of our readers to the fact that the people of the United States are now the chief supporters of the colonial system. Their food and their cotton go to England in British ships, to be disposed of by British merchants, transported on British railroads, converted into cloth by British looms, and retransported to the place of consumption on British roads and in British ships; and at every stage of the process a contribution is, in one form or another, exacted for the support of British fleets and armies, employed in the constant deterioration of the condition of the people of Ireland, India, and of all the other countries dependent upon Great Britain; and the result is seen in the fact that each and every of the countries so dependent is rapidly becoming exhausted, and its people are becoming pauperized and enslaved.

We pray our readers to study the following sketch of recent proceedings at the British colony of the Cape of Good Hope, and then to remember that they themselves are the chief contributors to the maintenance of the armies employed in destroying the houses and wasting the lands of the peaceful and industrious Hottentots:—

THE ENGLISH IN SOUTH AFRICA—RESULTS OF BRITISH "CIVILIZATION."—It has been remarked by some one that the chief result of the extension of British rule and "civilization" over India, has been to drain it annually of one hundred million pounds, to be spent chiefly in England. Some of the English papers are making disclosures relative to tyrannical proceedings at the Cape of Good Hope, by English officials, which do not speak well for those who are continually flaunting before the world the beneficial results of the extension of English power.

It is charged that the English Governor, Sir Harry Smith, had compelled the native chiefs to give up a large portion of their lands.

At the public meeting of the London Missionary Society in London, the Rev. J. J. Freeman, Secretary of the Society, who has been on a visit to the Cape, stated that Sir Harry Smith, at a public meeting of chiefs, held up a treaty and tore it to atoms, saying, "There go the treaties."

He also charges Governor Smith with forcing the Griquas, by intimidation, to sign away large sections of their country, telling them with solemn oaths that unless they signed the treaty by five o'clock that afternoon, he would hang them up to the beam in the room where they were then standing.

When Sir Harry Smith heard that some of the Christian Hottentots had joined the Caffres, he styled them a set of "psalm-singing rebels."

It is further stated that the Government had burned the habitations of a number of Hottentots who had been heretofore faithful to the English. The account says:—

"The Hottentots entreated for their friends in vain; nothing availed—neither the cries of the children, nor the tears of the mothers, some of whom were in childbed with babes of three or four days old, on one of the coldest days of the inclement season; and that on a Sunday, the day of peace, rest and prayer, two hundred and fifty persons were burned out and driven from their homes."

Mr. Freeman also denounces the annexation of territory in the interior of Africa, as tending to involve the inhabitants in savage wars.—*Exchange paper.*

ON THE FOOD OF PLANTS.

BY A FARMER.

IF we imagine a soil properly pulverized, and yet retaining such a degree of firmness and consistency as to give a secure hold to the roots, a plant situated in it will find a matrix at once suitable to receive and transmit the atmospheric influence, and also to supply the moisture necessary for the wants of the plant. But if the mineral ingredients of such a soil are insoluble, and fixed, (as it is expressed in chemical phraseology,) a plant will certainly live in such a situation by deriving much of the food it requires from the atmosphere. But vegetation in such a situation and under such circumstances will not suffice for the farmer. It is only by means of certain soluble ingredients in the soil that this normal state is attained; and if the soil does not contain these soluble substances, or does not contain them in sufficient quantities, it then becomes our business to supply them. These supplementary substances, (if the expression may be allowed,) this sustenance for the plants, to which the name of "manures," or "stimulants," have been given, according to the point of view under which they are contemplated, is therefore an important subject for study. After having given the plant a suitable dwelling-place, we must also supply it with suitable food: in this respect plants resemble animals. But in order to understand what we are about, it may be advisable briefly to recapitulate the principles of vegetable physiology on which this doctrine is based.

If we call to mind the mechanism of vegetation, we find that water, containing various substances in solution, penetrates by endosmose into the roots, rises from thence by capillary attraction under the bark, where it is called *sap*. When it reaches the leaves, a portion is removed by evaporation, and the solution of course becomes more condensed. Under the action of air and light, the free carbonic acid it contains is decomposed, carbon is fixed in the plant, and oxygen given off into the air. During the night, on the contrary,* the oxygen of the air is absorbed by the leaves, combined with the carbona-

* This assertion, that during the absence of light growing vegetables vitiate the air, is to be received with some caution, as it is by no means well established.—TRANSLATOR.

ceous elements of the sap, to be again decomposed at the return of light. The solid matters present in the sap are deposited, according to their special natures, round the cellular vessels, or on the surface of the leaves, or at certain determinate parts of the structure; the superfluous or injurious matter being carried off by the descending sap, and eliminated from the roots as excrement.

It is unnecessary to follow the sap through the various changes its elements undergo—the successive changes by which sugar, mucilage, gluten, albumen, and the various vegetable acids are formed; this part of the subject belongs to vegetable physiology.

All soluble matters within their reach being absorbed by plants, (a fact well ascertained, even in the case of virulent poison,) which of these substances are so essential to vegetation that plants in general cannot be deprived of them without suffering? And, in the second place, do certain kinds require certain substances to be present in the soil, which are not absolutely necessary to others? In a word, is there in vegetables a universal food, so to speak? or does each plant require a special one? These are the questions which we have to examine.

1st. The Food necessary for all Vegetables.

The attempt has often been made to ascertain by experiment the substances essential to vegetation, or those by means of which the vegetable can live and grow, though deprived of all others. It has at least been ascertained that a plant cannot live without oxygen and carbonic acid. In an atmosphere deprived of moisture, a plant will not live; water is therefore also indispensable, not only on account of its solvent powers, but also because its elements enter into the formation of many of the products of vegetation. As for carbonic acid, that which is absorbed by the leaves, though sufficient to support life, does not appear to be enough to secure the full development of plants, as the following experiment (which also goes to prove the importance of vegetable matter in the soil) will satisfactorily show.

Two boxes were taken, the one containing soil calcined, so as to destroy all organic matter; the second contained soil in its natural state. In both a few grains of peas were sown, and it was observed that the plants in the former were much less vigorous than those in the natural soil. Upon examination, the first contained .46 of its weight, and the second .57, or rather more than half its weight, of carbon. This difference was undoubtedly owing to the carbon present in the second box.

In all the experiments which have been made, none have as yet been undertaken under such circumstances as to exclude nitrogen in its simple form, so that we cannot speak positively as to its importance. But as it is universally present in the form of ammonia, and as it enters largely into all the more important vegetable products, we may safely affirm that nitrogen is requisite for plants.

Thus, oxygen, water, carbonic acid, and nitrogen, are the primary and indispensable elements of vegetation. The action is undoubtedly assisted by the important agents heat and light, and in all probability by electricity.

Chemical analysis demonstrates the justice of this conclusion. Amongst a great number of substances, varying with the species, the climate, and the soil, these important ingredients are always present. They exist in the form of starch, gum, sugar, manisite, ulmic, gallic, acetic, malic, citric, and other acids, and neutral substances. In a word, they form the basis of the almost endless variety of organic compounds which modern chemistry has brought to light.

2d. The special Food of Vegetation.

It might have been thought that the above-mentioned substances would have sufficed to give stability and solidity to plants, especially as carbon forms such a large proportion of the vegetable tissues. If even this had been possible, the framework of a plant is not exclusively composed of carbon, certain alkaline and earthy matters being always found to be present along with the organic portion of vegetation. The difficulty exists in the varying proportion in which these alkaline and earthy substances are found, not only in different plants, but even in the same species when grown upon different soils. They are to a certain extent interchangeable amongst each other, so that it is difficult or impossible to say which of them are absolutely indispensable to vegetation. It is even possible to imagine a plant *existing* without any of them, in the same way as a mammiferous animal may live after all the solid portions of bones have been removed.* In both cases, though life might be maintained, neither the animal nor the plant could fulfil their destined uses. Besides the materials necessary to support life, as oxygen, water, carbon, &c., there are therefore others, which, though of less importance, are necessary to enable plants, as well as animals, to arrive at full perfection. It is therefore of importance to ascertain how these are introduced into vegetation.

The plant lives and grows by absorbing into its substance the various gaseous elements that exist in the atmosphere and the soil. The water absorbed by the roots contains, in solution, a considerable quantity of the alkalies and earths; drawn upwards towards the extremities of the plant, this solution is evaporated by the leaves. The various solid matters which are thus introduced, after passing through a great number of chemical changes, are then by the flow of the sap dispersed over the plant. Are we then to consider these substances as excretions which the vitality of the plant is able to carry no further—or are they essential to the organization of the plant?

If the substances of which we speak are only to be regarded as excretions, or as an attempt made by the organs to relieve themselves of useless matter, it becomes necessary to explain how it happens that potash and soda, added to a soil deficient in alkalies, so powerfully assist vegetation. We can only understand the action of these substances, by supposing them capable of supplying an element necessary to the growth of vegetation; and perhaps they also in some way or other assist the chemical changes which are going on in the interior of the plant.

For certain plants it is necessary to admit the value of chalk or lime; and the importance of gypsum to certain of our cultivated plants is also sufficiently well known to prevent it from being considered a substance to which they are indifferent. If it be also considered that silica, alumina, (?) phosphoric acid, oxalic acid, &c., are not deposited indifferently in all portions of the plant, but in certain special determinate organs; that there is, therefore, on the part of these organs, a certain power of choice, a vital action, which enables them to separate those substances from the sap which they require, to the exclusion of others; it is difficult to assign any other reason for this well-known arrangement, except that nature has prepared a special place for each of these substances, and has assigned them certain determinate functions in the formation of the vegetable tissues.

These reflections conduct us to the conclusion that a great number of the earthy and alkaline substances, carried by the current of the sap into the cir-

* We very much doubt the possibility of an animal living under such circumstances; if even it could, such abnormal existence or disease (as it should be called) does not afford ground for comparison.

culatation, are useful to vegetation, by giving to them their full vigour, their proper size, and their diversified properties. We do not yet pretend to be able to assign to each one of these various substances its particular function in accomplishing these important ends. It may, perchance, be shown at some future time, that certain compounds are absorbed and assimilated by plants in the state in which they exist already in the soil, or in the manure. The science of vegetable chemistry is yet far short of perfection, and holds out the most brilliant results to those possessed of the industry and skill necessary to investigate this difficult subject.

After having thus settled the first question proposed, another one arises: Do all plants make a similar consumption of the soluble materials present in the soil, or have they the power of selecting those most suitable to their wants? In a word, do the different species of plants require, each one, a different nutriment?

Plants, even when grown in the same soil, do not draw up a sap exactly identical. Saussure has proved in the most positive manner that the roots have the power of selection, though his experiments on the unequal absorption of different salts are not quite satisfactory: for instance, sulphate of copper, though soon causing the death of the plant, is absorbed in as large quantities as any of those compounds which are beneficial to vegetation. Saussure explains this anomaly by showing that, in the case of the sulphate of copper, the roots were decomposed, and consequently, except at the commencement of the experiment, only acted mechanically. It was well ascertained that the substances present in any solution were absorbed in very different proportions where their substances were not, like the sulphate of copper, positively injurious: for instance, *Bidens* (bur-marygold?) and *Polygonum* (buckwheat?) absorbed the salts in the following proportions:—

	Bidens.	Polygonum.
Chloride potassium	16	14.7
Chloride sodium	15	13.0
Nitrate of lime	8	4.0
Sulphate of soda	10	14.4
Muriate of ammonia	17	12.0
Acetate of lime	8	8.0
Sulphate of copper	48	47.0
Gum	32	9.0
Sugar	8	29.0
Humus (<i>extrait de terreau</i>)	6	5.0

These experiments were repeated with the greatest care; and it was proved: 1st, That plants absorbed all mineral substances when dissolved in water; 2d, That they were absorbed in very different proportions, according to the plant experimented on: this absorption was also quite irrespective of the fluidity of the solution; and, 3d, That organic matter, when dissolved in water, is not in that shape absorbed by the roots, but decomposed by their influence, and then partially absorbed.

1. Without entering into the minute details of the experiments, the absorption of the following substances was proved: prussiate of potash, chloride of sodium, sulphate of copper, acetate of lead, chloride of barium, ioduret of potassium, and many others. The absorption of nitrate of silver, corrosive sublimate, and gallic acid, did not take place until after the death of that portion of the plant plunged into their solution.

2. When the plants were placed in a solution containing two salts in equal proportions, it was satisfactorily ascertained that they were absorbed in different proportions. Even when the salts were present in different proportions, this elective absorption was not deranged. In a solution containing three

times as much common salt as nitre, a plant of *Chenopodium viride* (Goose-foot) absorbed much more nitre than common salt; whilst the contrary took place with *Solanum lycopersicum* (Nightshade). Other plants selected also common salt, and the *Tamarix* chose only sulphate of magnesia.

3. It was also ascertained that, when a plant was placed in a solution of fermenting manure, the disagreeable smell, which had been previously emitted, gradually disappeared.

If these experiments have not quite settled the question, they have at least strengthened the opinion that plants appropriate to themselves soluble substances in very different proportions. Chemical analysis of different plants grown on the same soil, also completely establishes this proposition. With regard to the oxygen, carbon, hydrogen, and nitrogen, chemical analysis has also proved that they are present in plants in proportions varying with the species, but agreeing very closely in the same plant. Analysis has also most clearly established the great diversity of the proportions in which different plants assimilate the alkaline earths. For example, some plants will be found to contain common salt in large quantities, whilst wheat grown on the same soil will contain none. Other plants again, as the wall pellitory, the nettle, and borage, will be found to contain nitrates in large quantities, though they may be grown alongside of plants containing none at all. It seems therefore impossible to avoid the conclusion that plants possess the property of choosing, or at least of retaining certain substances in preference to others, and, consequently, that different plants require different food.

But this opinion does not rest on the authority of chemical analysis alone, it is confirmed by the experience of agriculturists. For instance, it is known that certain manures seem especially to favor the growth of certain plants, as gypsum for clover; that certain plants only thrive on soils where they can obtain an abundant supply of a special ingredient, as the fern and the chestnut, on soils rich in petash, or such as are derived from slate rocks, and those of volcanic origin; that a mixed husbandry is the most productive; that a plantation containing a variety of trees produces more wood than if one species alone had been planted. These multiplied facts prove that it is not a certain quantity of a nutritive principle, but a choice amongst several, that is necessary to vegetation.

3d. *Researches respecting the Food most suitable to different Plants.*

The difficulties which we encounter in attempting to settle the general question become still more serious as the attempt is made to descend from general to particular cases.

It is rarely that an opportunity occurs which enables us to decide upon the effect of such or such a manure upon plants. To do this with certainty, the substances tried must be in a state of chemical purity; and as plants are composed of a great number of different substances, it would also be necessary to try each one of these separately, and to observe the effect of their application, and of the want of them; an admirable subject for the study of those who are ambitious to establish on sure grounds the principles of scientific agriculture. The long and difficult experiments necessary for this purpose have as yet hardly been commenced, and our knowledge of this important subject is as yet merely empirical. But the information we already possess must not be despised because it has not as yet arrived at the perfect solution of the question, especially as the benefit of certain mixed manures to certain plants is well known. In addition to the examples quoted in a former part of this paper, the benefit of lime to cereals, and of the sulphates to leguminous and cruciferous plants, is well known. But the very limited number

of instances we can quote, is a significant proof of the state of our knowledge. The most of the manures used contain a great number of the elements of vegetation, and it is difficult to distinguish what each plant carries off, and what is left for future crops.

In the meantime, until the experimental application of different manures shall have pointed out what is most suitable to the plant we wish to cultivate, we have no other guide than chemical analysis, or examination of the quantity of nitrogen, carbon, and mineral matter present in the ashes of the plant. Such an analysis shows us the substances which a plant has absorbed. But it is only after having submitted the growing vegetable to an experimental test, that the effect of these various nutritive matters, and the theory of vegetable food, can be established on a settled basis. When we shall have arrived at results from the combination of these two methods, first ascertaining by *analysis* the materials which enter into the composition of plants, then by *synthesis* offering these materials, and thus satisfactorily ascertaining their individual effect, the science will then be perfect.—*London Farmer's Magazine*.

CONSUMPTION OF GUANO IN GREAT BRITAIN.

THE following statistics of Guano imported into the British islands will probably have interest for those of our agricultural readers who are in the habit of exporting all their produce to be consumed at a distance, thus impoverishing their land and exhausting their capital, when it needs but a brief effort to bring the consumer to their sides, making a market on the land for all its products, and enabling them to return to it the manure, augmenting instead of decreasing its productive power:—

In 1841 the total quantity imported into the United Kingdom was 2,881 tons from Peru and Bolivia; in 1845, owing to the discovery of supplies on the coast of Africa, it rose to its highest point, namely 283,300 tons, of which Peru and Bolivia contributed only 14,101; and in 1848, the African supply having almost entirely ceased, it had declined to 81,414, nearly the whole of which was from Peru. Since then the total has again increased, the quantity having been 83,438 tons in 1843, and 116,925 (of which 95,083 were from Peru, and 5,587 from Bolivia) in 1850. During the past year various minor shipments have been received from the Azores, Mexico, Brazil, and Buenos Ayres, and at the same time those from Africa, Chili, and Patagonia, have all partially recovered. The increasing demand is evidently occasioning renewed inquiry as to the resources of other countries with regard to this material. The extent of the newly-found deposits at Shark's Bay, Swan River, remains yet to be ascertained, but the accounts regarding them have thus far been promising, both as regards quantity and quality.

MANGOLD WURZEL AND SALT.—My crop of Mangold Wurzel, in the autumn of 1843, was magnificent; more especially on two thirds of the field which adjoined a small coppice-wood, which, having been cut during the previous winter, gave life and vigor to all the weeds that had been kept under during the previous ten years. And this part of the field was, consequently, covered with common groundsel, which, during the wet spring and fine summer, sprang up and flourished surpassingly thick, covering every space between the drills. I ordered my old friend and assistant, common salt, to be strowed over the groundsel and between the drills, following the hoes, which were at work upon this weed. The result was, their total destruction. The quantity of salt applied was much more than I intended, and I apprehended injury to the wurzel; they were, however, far advanced in size. But, so far from suffering, they increased immensely. The crop—upwards of 100 tons. [How did you ascertain this?] The field is $1\frac{1}{3}$ of an acre. Wheat followed—an excellent crop. Then turnips after ploughing; which are, at this moment, flourishing—for sheep by-and-by. From the moment the turnips came up, the part of the field salted has been most conspicuously superior to that not salted; so much so as to be visible from the opposite side of the valley.—*Waterhouse, near Bath*.

ENGLAND'S FREE TRADE PROFESSIONS AND PRACTICE.

THE *London Nautical Standard*, says the *Republic*, in an article devoted to the World's Exhibition, indulges in a strain of comment on the free trade professions and policy of England that it may be possible for some of our friends to profit by. The *Standard*, after stating the total number of exhibitors from foreign countries at 9,743, of which France sends rather more than one third of the whole, proceeds to say:—

"These figures must give to Englishmen much to think, and to reflect. But a few years ago Belgium could hardly be considered as a manufacturing country, and this year she sends to Hyde Park the large amount of 1,050 specimens of her own productions. France, in 1815, had but few and unimportant manufactures, and in 1851 she presents the high number of 3,329 samples of her commerce. Prussia is represented by 1,072 articles of her own fabrics, and many States, which a few years ago were represented as our customers, have become manufacturers and concurrents with us in many foreign as well as in our own markets. We are afraid that the progress made by many of the nations we have named is owing to the blind policy England has followed for so many years: by imposing many and heavy taxes on the productions of other countries, *we have caused them to impose the very same duties on our own, and in self defense they have been obliged to become producers instead of buyers of goods.* We quarrel with other countries for imposing duties on our goods, and in the same breath we mulct their productions to the utmost. We grumble at the French for laying a duty on our sea-borne coal, and we lay a tax of three or four times its market value on their brandy. We ask Government to interfere with the ministers of the United States on account of their protective tariff, and we put and receive a duty of something like eight hundred or nine hundred per cent. on their tobacco. *In fact, we insist on our goods being admitted free of duty abroad, and we tax other countries' goods with the largest and most exorbitant duties.* We speak about reciprocity and free trade, but we do not follow out our boast nor our principles."

CONCENTRATION AND VARIETY OF PURSUITS.

WE have repeatedly urged the improving effect of concentration and variety of pursuits on all the arts of useful and productive industry. In a late number it was said, that he who wishes to see and enjoy fruit and flowers in the greatest variety and excellence to be met with in the United States, must turn his face to the bleak North, and wend his way to the rocky and snow-clad regions of Connecticut, Rhode Island, and Massachusetts, where he will see, as he travels cheaply and swiftly in all directions, what would seem to be a desperate, impracticable compound of stone and sand. Nevertheless, it is there where the loom and the anvil are found in social proximity to the plough and the harrow; there he will see the plough and the spade rewarded with the heaviest crops. A practical knowledge and familiarity with the arts of horticulture and floriculture is not there the exception, but the rule. As men of various occupations approach each other and combine their knowledge and their labors, refinement ensues in the practice of all the arts; the coarser and simpler occupations, as the growing of grain, and cattle, and sheep, and horses, are relinquished and pushed farther off, to be followed by men who live to exhaust in their culture more distant lands, and to live in ignorance of and abstinence from fruits and flowers, making shift to get along as well as men can do who live apart from each other, and who, having no market at hand, have no encouragement to cultivate the luscious pear and the harvest plum; the purple grape, the tulip, the carnation, and the japonica. From all these exquisite enjoyments are men precluded when nobody is near to consume the products of the land. In Massachusetts not only is every imaginable pursuit followed with activity, so near to each other as to afford

mutually a market and a support, but they have provided, in all directions, the best possible roads of stone and of iron; so that over any given distance the shortest possible time is consumed in the work of exchange of product for product. They seem *in this* to have thoroughly put in practice the *great spring* to improvement in every art. Yes, this is the only road to certain and progressive improvement, and reward to labor and capital; and the policy that promotes it is *the one* in which the landholder above all men is most deeply interested. If any one doubts the practical effect of success in the growth of fruits and flowers, and how invariably it denotes not only high social and intellectual refinement, but increased value in lands, let him inquire, and see if he does not always find lands rising in value as they are connected with or form the localities where fruits and flowers are most generally cultivated, and in greatest excellence and variety.

THE WAY THE FARMERS PAY FOR IRON.

WE learn from the Pittsburg papers, that D. Kilgore, Esq., President of the Steubenville and Indiana Railroad Company, is now in that city superintending the engraving and printing of the Company's bonds, which are nearly ready for execution. These bonds are on the city of Steubenville, and the various townships in Jefferson, Harrison, Carroll, Coshocton, and Tuscarawas counties, Ohio, which voted in favor of subscriptions to the Railroad. They are of the denomination of \$1000, bearing seven per cent. interest, payable at the office of the Ohio Life Insurance and Trust Company in the city of New York. The amount subscribed is about \$1,000,000, which, it is supposed, will be sufficient to build the road from the Ohio River to Coshocton. An effort will be made to push this road east from Steubenville to Pittsburg, a distance of about forty miles, so as to connect with the Pennsylvania road at that point. There is a charter in existence for this route, and the estimated cost is between \$800,000 and \$900,000. If this link were completed, it would successfully compete with any other road for the trade of Southern Ohio.

We take the above from one of our exchange papers, with a view to call the attention of our agricultural readers to the similarity of the course of things at the present time, and in the "prosperous" years 1836, '7, '8 and '9. At that time the States of Indiana and Illinois issued bonds to the amount of many millions of dollars, and thus created a debt under which they have been struggling from that time to the present hour. Now it is the counties of Jefferson, Harrison, Carroll, &c. &c., that issue their bonds, and the disposition that is made of them will be seen by the following paragraph, which we take from the *Pittsburgh Journal*:—

The British iron bought by the Ohio and Pennsylvania Railroad Company, 8,000 tons, cost \$34 per ton, laid down on the landings at Quebec and New-Orleans.

The American iron bought by the same company, 3,000 tons, cost \$52½ per ton, laid down in Allegheny City, or at Beaver.

The recent contract with the same parties, for 2,500 tons more of American iron, is at \$48 per ton. If the clear saving on the 8,000 tons British iron were no more than \$5 per ton, it would be a total of \$40,000 saved to the stockholders of the Ohio and Pennsylvania Company, by the purchase of British iron.

The people of Ohio, whose farms are underlaid with coal and iron ore, unite to give bonds—that is to say, to mortgage their farms—for the purchase of British food in the form of iron, believing it more profitable to them to employ British laborers in Great Britain, than to offer them inducements to come here and eat their food while employed in making their iron. The British laborer, at home, may perhaps consume one, two, three, or five pounds of their food in

the course of the year, whereas, once here, the whole product of his labor would go to the purchase of food for himself and his family—to the payment of those employed in raising the cotton and the wool, and in converting them into cloth for the use of his family—and to the payment of the men who were employed in furnishing them with house accommodation, &c. &c.; and each and every one of the men thus employed in his service, would be a customer to the farmer for food. The market to the American farmer afforded by a single ton of American iron, is greater than that afforded by twenty tons of British iron; and yet our farmers are busily employed in closing our furnaces and compelling miners and furnace men to become farmers, while mortgaging their farms for the purchase of British food in the form of iron. The effect of this is already visible in the low price of grain, and should the anticipation with regard to the crops in Europe and in this country be fully realized, the day would seem to be not far distant, when our farmers will experience in its fullest extent the *benefits* of the tariff of 1846, in closing a *large and rapidly growing market at home*, for the purpose of securing a *small and rapidly decreasing market abroad*.

FARMERS AND MECHANICS WANTED.

WE have long been of opinion that no part of the United States offered greater advantages to the laboring population than the Lake Superior region. The climate, though cold in the winter season, is remarkably healthy, proving a sure remedy for the fevers and consumptive complaints of warmer latitudes.

The soil of large portions of the country is equal to any in the Western States, and yields large crops of the best potatoes, turnips, hay, oats, &c. The district about the Ontonagon river, especially, consists of excellent farming lands, and the copper mines now in prosperous operation in the same vicinity insure a home market for large quantities of agricultural products. We know of no section we can so heartily recommend to the attention of farmers as this. Potatoes, which can be raised for 15 to 20 cents a bushel, bring in the fall 62½ to 75 cents, and other crops at similar proportionate advances, while the demand continues so much greater than the supply, that large quantities of roots and grains, such as are raised about the mines, are still transported from Detroit, a distance of seven hundred miles.

All kinds of labor are in great demand, and at prices far above what is paid below, in consequence of want of men. None go to the upper country but they easily find employment, and good, sober men secure permanent work at such wages as they have never received in the older settled portions of the States. To all industrious men, seeking employment, we recommend the mining region of Lake Superior. Here, if so disposed, their wages may be invested in lands, the increase in value of which will cause their profits rapidly to accumulate.—*Lake Superior Journal*.

CAN GRAPES BE PROFITABLY CULTIVATED IN POTS?—I had a few eyes of *Hamburgh* and *Welbeck Black Tripoli*, which I put into pots in the first week of March, 1849; they rooted in three weeks, and were potted off singly. At the end of 28 days, when they had made four leaves, they were pinched off at the top, the lateral that was afterwards produced, forming the fruiting plant. The 12 plants were kept in a strong moist heat of from 70° to 90°; they were twice shifted during their summer growth, and by the end of September they had each made 17 feet of wood. They were then removed to a south wall; very little water was given them, and on the 1st of January, 1850, they were put into a pit heated by hot water. They broke regularly from the pot to the top of the plant, many of the eyes showing two bunches of fruit, and some of the plants had 30 bunches on them, but these were reduced to 7 bunches to each plant. They ripened perfectly, and I commenced cutting on the 12th of May. When the fruit was removed, the plants were liberally supplied with strong manure-water, and they are now in a fair way to bear a good crop next season.

GEORGIA—HER STATISTICS AND PROSPECTS.

THE lead which Georgia is taking of all the Southern States should be a lesson to her neighbors to build up factories along with her railroads. Each helps the other. To attempt to build railroads, when there are no products of domestic industry to secure them profitable employment, is to put the cart before the horse.

The population of the city of Augusta, Georgia, is ascertained to be: whites, 7,138, slaves, 4,742, free colored persons, 224—total, 12,104. The total population in 1845 was 7,502. The increase in five years, therefore, has been 4,602, or a fraction over 61 per cent. Upon this remarkable increase, which the *Chronicle and Sentinel* says has been mostly within the last two years, that paper remarks:—

This is a very fair demonstration of the influence of manufactures upon the growth and prosperity of cities, which will apply with much justice to the country. Let Georgians and Southern men, as they would merit the character of patriots, statesmen and philanthropists, ponder on these facts, and persevere in the great work of enriching the South, improving the condition of the people, and rendering her independent.

All this may be accomplished by building up manufactories in every neighborhood, village, town and city throughout the South, which will give the wives and children of the poorer classes employment, and convert them into producers. Now the great mass of them are merely consumers, adding little to the wealth of the country; create a demand for their labor, which they have to sell, and they become at once wealth-producers, enriching themselves and adding greatly to the wealth of the country.

POULTRY MANAGEMENT.

I HAVE always considered the rearing and management of poultry a matter of much more importance to the farmer than he is generally willing to believe. My poultry are of the same sort as may be found in any of the neighboring farm-yards; the eggs of the largest and best hens have been selected for sitting, so that the stock consists of birds capable of covering 15 eggs, which is the largest number I ever place under a hen. The cocks are changed every two years, taking care to supply their place with fine healthy birds of the previous year. Hens are useless after the third year; my plan is, in a stock of say 30 hens, to introduce 10 young pullets every year, and part with 10 of the oldest hens. One male bird must be kept to every seven hens; but when more than 50 hens are kept, one to every six is necessary. On the proportion of male birds kept depends, I am confident, the number as well as the successful fecundation of the eggs. About a month since, as an experiment, I placed 13 eggs, which I had procured from a farm-yard where the proportion of male to female birds is about 1 to 15, under a hen; and mark the result. From 13 eggs were produced three chickens; seven of the eggs, at the end of the three weeks, were almost as fresh as when just laid, and three were addled. My chickens are fed twice a day, in the morning about half-past 7, (later of course in winter,) and at 2 in the afternoon. Their food consists, during the five summer months, of dry barley, and from October till April of boiled barley given warm, and 20 oz. per day each of tallow-cake or chandlers' greaves, (the same as used by Mr. Huxtable for his pigs;) the cost of this latter is a fraction under a penny per lb., and is, I think, the best and cheapest substitute for the animal food they are unable to procure in the form of flies and insects, at that season. I have found by experiment that fowls will lay more regularly on barley than on any other grain. Hens during the period of incubation should be fed on dry barley, as the greater the heat maintained in the body of the hens, the finer and more numerous will be the progeny. Never turn the eggs, as some do; the hen will do this herself. Leave the chickens till nestled, *i. e.*, till the down becomes dry; feed them with soaked bread for the first two days, returning them as soon as fed to the mother, after which they may be kept on tail wheat, (and curds, if you have the milk,) until they are seven or eight weeks old,

when, and not till when, they may be fed on barley and barley-meal mixed with bran or pollard. I have this year only 18 hens and three cocks, the foxes having stolen rather more than one third of my stock during the winter; these 21 fowls consume a sack of barley, which costs now 11s., in 31 days, and have laid on an average 16 eggs per day since the 1st of March. I find the expenditure for corn, tallow-cake, &c., for the old stock (not for the chickens produced by them) pretty nearly balanced by the receipts from the eggs one time with another. The following is the account, Dr. and Cr., of a stock of eight hens and one cock kept by myself, in an enclosed yard, during the year 1849.

DEBTOR.

Eggs sold—number unknown, but furnished all food consumed by the nine fowls mentioned,	£	s.	d.
Chickens reared—33 couple, sold at 3s. 3d.,	-	0	0
13½ couple, reserved for stock for present year, at 3s.,	-	5	7
3½ couple of ducks, at 2s. 9d.,	-	2	0
	-	0	9
	£7	17	4½

CREDITOR.

1 sack of barley consumed by young chickens,	£0	15	6
1 strike of barley for do., and grinding,	-	0	4
1 cwt. bran,	-	0	5
6 pecks tail wheat,	-	0	6
Marketing expenses,	-	0	6
	-	1	1
	£6	0	5½

£6 Os. 5½d., divided by 8, the number of hens, gives a net profit of rather more than 15s. for each hen.—*The Son of a Country Rector.*

MINERAL INGREDIENTS PER ACRE OF AVERAGE AGRICULTURAL CROPS.

Potash at 4d. per lb.	Salt, 2d. per stone.	Lime, 6d. per bushel.	Gypsum, ½d. per lb.	Bones, ½d. per lb.	Total.
lbs. s. d.	lbs. d.	bshl. d.	lbs. s. d.	lbs. s. d.	s. d.
Wheat, ... 6 2 0	14 2	1 6	6 0 2	34 1 5	4 3
Barley, ... 14 4 8	17 2½	1 6	12 0 4	48 2 0	7 8½
Oats, ... 42 14 0	7 1	1 6	9 0 3	8 0 4	15 2
Rye, ... 9 3 0	10 1½	1 6	16 0 5½	13 0 6½	4 7
Bean ... 88 27 8	44 6¼	1½ 9	8 0 3	70 2 11	52 1
Peas, ... 28½ 9 6	36 5	2 12	32 0 11	60 2 6	14 4
Swedes, ... 106 35 4	100 14	1½ 9	70 1 11	66 2 9	41 11

If the analysis be correct, and the foregoing hypotheses also based on proper principles, it follows that wheat can be grown at less expense per acre than any other crop; and it may be equally deduced that it is less exhausting to the land. It also follows that such land as contains the greatest portion of potash and phosphoric acid can be cultivated the most economically.—*On the Possibility of growing Wheat successively on the same Land, by H. Briggs, Wakefield.*

ENGLISH AGRICULTURAL DINNERS AND SPEECHES.—A writer in a late English Agricultural paper says: "We should have been glad to have heard from one from the further hemisphere the words he would have uttered; we mean Colonel Morris, of New-York. But the rules of the Society silenced him, though the meeting called upon him by name. Mr. Rives, of Virginia, we would also gladly have heard. Virginia, so associated with our own great countryman Raleigh, so wise, so learned! The axe and the veto of a chairman can cut short instruction. However, in excuse it may be supposed the American guests might argue the question of free trade, and so put the meeting in hot water. At these meetings much information is obtained from men who attend from various countries. It is to be hoped Devonshire will improve after this visit of the Society. Cream and apples are very good things, but good farming far better."

HOLLYHOCKS.

IF I were not afraid of advancing a horticultural heresy, I should say that many amateurs prefer hollyhocks to dahlias. The hollyhocks of Belgium and Germany had a great celebrity long before they appeared among us. The collections of the Prince of Salm Dyck, and M. Van Houtte, of Ghent, have been much admired. In other places varieties have been obtained with leaves more or less lobed, more or less entire, more or less palmate, all with flowers large, full or colored differently from those of other plants, being sometimes of a more or less dark mahogany color, at others of a delicate tint, and varying from the purest white to the darkest glossy black. Some progress has also been made in the cultivation of those plants by ourselves. Since 1830, M. Pelissier, Jr., a gentleman of Prado, has cultivated hollyhocks, and from the seeds of a pink variety has succeeded in obtaining plants with flowers of a delicate rose color, and which, in consequence of the extreme delicacy of their tints, and regularity of form, may serve both to encourage perseverance and as a good type for seed. In the following year, from the seeds of pink flowers, he obtained a beautiful, brilliant, clear, sulphur-colored specimen, perfect in every respect. It is from the seeds of those two plants that he has obtained all the other beautiful and remarkable varieties which he now possesses, after a lapse of ten years from his first attempts. As a general rule, M. Pelissier prefers flowers with six exterior petals, with entire edges, well open, well set out, of a middling size, of a pure, clean, brilliant color, and forming a perfect anemone. Seeds sown in the spring and in unwatered ground never flower till the second year. Experience has shown that if the seeds are sown in September, and in earth which is kept fresh, flowers may be obtained in June or July following, which are in no way inferior to those of spring-sown seeds. M. Pelissier follows the following plan of procedure: The seeds, which are taken as soon as they are ripe, from good specimens, are sown in September, in a border a foot and a half deep, and composed of good coarsely sifted garden earth, mixed with well-worked soil. The seeds, if they are covered lightly with leaf-mould, and the soil is kept fresh, begin to swell at the end of the week; they require little care till spring, as they are not hurt by frost. In the spring the ground must be reprimed, occasionally hoed, and frequently watered. As the flowers expand, M. Pelissier removes whatever is not conformable to the type he has chosen, or is not of a marked color, and like a perfect anemone. It is by doing this every year that he has obtained twenty remarkable varieties.

We wish we could see more attention paid to the cultivation of this magnificent flower—only neglected because not very new, nor difficult to be had.

CHEAP LABOR.

It was recently stated, in a mercantile paper, that in Massachusetts, the great staples of agriculture—cereal grains—beef and pork, &c., had diminished, as appears by the census, with the growth of manufactures; and an argument was thereon predicated, or rather a conclusion jumped at, that therefore manufactures were thriving at the expense of agriculture. Now nothing could well be more fallacious than such an inference. So far from it, it comes in direct corroboration of what we have ever contended for in the *Plough, the Loom, and the Anvil*; in fact, it illustrates the main purpose for which this work was established, for it proves that when the manufacturer sits down by the side of the agriculturist, when the loom and the anvil take their place by the side of the plough, then it is that men give up making corn and wheat, and rye, and oats, and things that are measured in bushels and sent off to be consumed at a distance, and go to making potatoes and turnips, and cabbages, and milk, and butter, and fruit, and onions, and carrots, that may, *on the spot*, be sold and exchanged for manure, or consumed on the spot and converted into milk and butter; the refuse of the land being in all

cases returned to the land; its ammonia, its phosphates, and all its elements of fertility which grain crops carry off and which bullocks carry off in their meat and bones to a distant market, is thus reserved and restored to the mother that bore them.

DAIRY MANAGEMENT.

"A FLINTSHIRE DAIRYMAN," amongst other questions of much importance to dairymen, which, I doubt not, will be readily answered by a more practical man than myself, asks how far the system of house-feeding is applicable to dairy management, particularly the manufacture of cheese? I would refer your correspondent to Professor Playfair's lecture in the 4th volume of the Royal Agricultural Society's "Transactions," where he will find that whilst house-feeding of cows is admirably suited for promoting a great increase of butter, if the animals are properly fed, grass-feeding, or out-of-door feeding, is essentially necessary for the manufacture of cheese. And this reason is assigned for the difference in treatment: that a generous diet and warmth and quiet are promotive of the oily substance of the milk, from which butter is made; but that exercise, and less rich nourishment, produce that peculiar substance in milk called casein, from which cheese is procured. In fact, it appears that, without exercise, very little casein is obtained from the cow, and that the waste of the tissues which exercise promotes, increases indirectly the amount of casein in the milk. It is, however, a matter of very great importance to the cheese farmers to ascertain whether, by feeding the cows more frequently with leguminous food, which contains a larger proportion of casein than other vegetable food, and giving them regular exercise, as your correspondent suggests, the advantages of house-feeding, which are in many ways of essential benefit, cannot be practised by the dairyman in the manufacture of cheese. The economy of food, the collection of manure both solid and fluid, the general comfort of the animals, the increased number of cows which can be fed on the same land, the facility of milking, &c., all combine to render the house-feeding of cows most desirable; and I hope some experiments will be made with this object in view. As exercise increases the casein in milk, a cow-house could be so constructed that there should be a circular covered walk, where the animals could be daily exercised; or could they not be trained to the yoke, and accustomed to draw light weights? (the manure, for instance, out of the yard.) Of course, great care would be required that they should not strain themselves, but merely exercise their muscles. I have seen in Flanders the ploughing of land by cows, but I should consider this much harder labor than is proper.—*An Old Subscriber.*

FLAX-SEED AS FOOD.—Will you allow me to communicate to the readers of your valuable paper the result of my little experience in the use of Flax-seed for feeding a saddle-horse. I was induced, from reading Mr. Sproule's articles in the *Gazette*, on Flax, and Warnes's System, &c., for farm-horses, to try the experiment with my saddle-horse, which has now been fed 12 weeks upon the following diet, and is in excellent condition, with a good coat, notwithstanding the severe weather to which it has been a good deal exposed; for, being a surgeon, I am obliged to leave it standing at the doors of my patients continually:—

6 stone (of 20 lbs.) of wheat-straw, at 6d.,	-	-	-	-	-	-	-	3s. 0d.
$\frac{1}{2}$ stone good hay, at 13d.,	-	-	-	-	-	-	-	0 6 $\frac{1}{2}$
$\frac{1}{4}$ score bran,	-	-	-	-	-	-	-	0 6
7 lbs. ground linseed, at 3d.,	-	-	-	-	-	-	-	1 9
(Per week.)								5s. 9 $\frac{1}{2}$ d.

These are retail prices, and include straw for bedding, which, however, is economized by being put up under the manger during the day-time. Upon this my horse has, of course, done easy work; it has, however, only been four days in the stable, and has averaged 8 miles a day for the last 12 weeks. I have also a drawback on the manure, which, at the price here, will I think reduce the cost of keep to 5s. a week. I should state that my apparatus is neither extensive nor expensive. I boil in a five-quart pan a gallon of water, with $\frac{1}{2}$ lb. of good linseed and a little salt, a common butter-firkin

being filled with the chaff (straw and hay) mixed with the proportion of bran; the boiling linseed is poured over it, and well mixed with a broomstick, more chaff being added as it settles, after standing an hour or two; this is given at night, and a second supply (the operation being repeated with a little more chaff) stands all night, and affords the animal as much as she can eat the whole of the next day; the salt increases her relish.—*J. B. N., Liverpool.*

WASH FOR FRUIT TREES.—I am, at this season of the year, frequently asked what is the best wash for fruit trees, both trunk and limbs. The following has given me the best satisfaction of all the various mixtures I have tried, and I have used no other for at least 12 years:—I use a large vessel, say a tub, made by sawing a molasses-hogs-head in two, at the bung, which will hold about 70 gallons; in this tub I put a wheelbarrow load of yellow clay, and an equal quantity of fresh cow-manure, covering it with water. After soaking and mixing a day or two, I add half a bushel wood-ashes, 1 lb. of sulphur, 6 or 8 lbs. of soft soap, and mix well together; then slake half a peck of lime, and add to the above, using water sufficient to make the whole about the consistency of thin cream, which will nearly fill the tub; mix well together for several days; then, with a common whitewash-brush (an old floor-brush will answer) I paint the bodies of the trees, having first used a smaller brush to paint the crotches of the limbs, and the limbs themselves, as far as possible. I think any gentleman trying this wash, or paint, if you please, will find it to give him perfect satisfaction on every kind of fruit tree in ordinary cultivation with us.—*Captain Lovett, in Hovey's Magazine of Horticulture.*

MANURE FOR GRASS LAND.—I was anxious to know what quantity of grass could be procured by stimulating manures, by experiment. This experiment has been made on 100 superficial yards of grass land; and by manuring after every crop, I have mowed five times, and have had each time as much grass on the land as what there usually is when persons mow for hay. The manures I made use of were pounded charcoal, malt-dust, muriate of ammonia, sulphate of magnesia, and nitrate of soda. The salts were put on in a liquid state, 2 oz. to each yard. I mowed the fifth time on the 10th of August. The land is by no means good land on which this experiment was made, and which is not yet completed. These manures will give to very poor land the appearance of very good land, as long as their effects last.—*C. A. A. Lloyd, Whittington Oswestry.*

PICKLING OF MEAT.—Professor Refinesque denounces the use of saltpetre in brine, intended for the preservation of flesh to be kept for food. That part of the saltpetre which is absorbed in meat, is nitric acid, or aquafortis—a deadly poison. Animal flesh, previous to the addition of pickle, consists of gelatinous and fibrous substances, the former only possessing a nutritious virtue; this gelatine is destroyed by the chemical action of salt and saltpetre, and, as the Professor remarks, the meat becomes as different a substance from what it should be, as leather is from the raw hide before it is subjected to the process of tanning. He ascribes to the pernicious effects of the chemical change all the diseases which are common to mariners and others who subsist principally upon salted meat, such as scurvy, sore gums, decayed teeth, ulcers, &c., and advises a total abandonment of the use of saltpetre in the making of pickle for beef, pork, &c., the best substitute for which is, he says, sugar, a small quantity rendering the meat sweeter, more wholesome, and equally as durable.—*Bath.*

NEW BOOKS.

The Year Book of Facts in Science and Art; exhibiting the most Important Discoveries and Improvements of the past year. One vol., pp. 328. Philadelphia: A. Hart, late Carey & Hart.

In the present age of improvement, when every day brings out some new discovery in science and art, such a book as the one before us cannot but prove not only vastly interesting, but almost necessary to enable us to keep up with the progress of the age. Looking into this volume the reader will be surprised at the many "new things" a single year has brought out.

FATTENING CATTLE.

A DISSERTATION ON THE PHILOSOPHY OF FATTENING CATTLE...PART II.

MUCH discussion has arisen between Mons. Dumas and Baron Liebig respecting the formation of fat; the French philosopher maintains that the vegetable which is partaken as food by the animal, possesses, already formed in its structure, all the fat which is absolutely essential for the animal; and that, like the gluten which is necessary for the formation of muscular or fleshy fibre, the phosphate of lime for the bones, and the starch or gum for the formation of animal heat, the fat which is contained in the vegetable is destined to supply the fat in the animal body.

On the contrary, Baron Liebig contends that if the animal is properly supplied with a greater quantity of the non-nitrogenous constituents of the food—viz. the sugar, starch, and gum, than are necessary for the proper supply of the demands in the animal heat, they become converted into fat in the animal economy. I am inclined to support the hypothesis of Mons. Dumas; for, in my humble opinion, I think it both simple and beautiful; and, if we take into our consideration the

animal in its primitive and original state, I conceive the accuracy of the theory cannot for a moment be questioned. But we must remember that the great quantity of fat we see accumulating in those oxen, sheep, and other animals, which we keep confined in our stalls, originates from an abnormal condition of the system, and is produced by the circumstances under which the animal is placed; and as such, in addition to the fat already formed in the vegetable, the animal possesses the power of secreting an additional portion of fat from the food which it consumes. The earthy and saline substances which are contained in the crops themselves have very important duties to perform in the animal body; thus, for example, they afford a supply of phosphate of lime for the due formation of bones, as well as the saline particles which are constantly present in the blood, flesh, softer tissues, and secreted fluids of animals. How far the ordinary cultivated crops are capable of properly answering these functions thus required of them, you will see on referring to the following Table:

TABLE III.
ON THE AVERAGE COMPOSITION OF CROPS.

100 Parts.	Water.	Woody Fibre.	Starch, Gum, or Sugar.	Gluten and Albumen.	Fatty Matter.	Saline Matter.
Wheat contain of.....	16	15	55	10 to 15	2 to 4	2.0
Barley	15	15	60	12	2.5	2.0
Oats	16	20	50	14	5.6	3.5
Beans	16	10	40	28	2	3
Peas	13	8	50	24	3	2.8
Potatoes	75	5	12	2	0.3	1
Turnips	85	3	10	1	?	1
Carrots	85	3	10	2	0.4	1
Meadow Hay	14	30	40	7	2 to 5	5 to 10
Clover Hay	14	25	40	9	3	9
Pea Straw	12	25	45	12	1.8	5
Oat Straw	12	45	35	1.3	0.8	6
Wheat Straw	14	50	30	1.3	0.5	5
Barley Straw	14	50	30	1.3	0.8	5
Buckwheat	18	18	45	10	2.6	2.3
Maize	13	16	51	10	5.6	2.5
Rice Dust	14	{ 77 }	2	2	5.2	2.2
Linseed (good)	10	{ 27 }	22	22	36	4
Oil-Cake	15 to 20	15 to 24	30 to 50	12 to 22	5 to 14	5 to 10

You will easily perceive from this useful Table, that 100 parts of the various species of crops grown by the farmer contain very variable proportions of dry solid food; thus, in order that the animal may obtain the same equivalent of dry food as 100 lbs. of hay would produce him, he must consume not less, but probably more, than 600 lbs. of Swede turnips or carrots, or 300 lbs. of po-

tatoes; but of this dry matter, you will please to bear in your recollection, the composition exerts a very material influence over its value as food. I have described the manner in which the gluten, casein, and albumen of the vegetable are converted into the blood, flesh, softer tissues and fluids of the animal: hence young animals which are supplied with food containing much of these muscle-forming

principles are found to grow rapidly, and their muscular frames will be duly developed: but, unless they are liberally supplied with such substances as fat, gum, and starch, by which the animal heat is formed and kept up, the animals will be muscular, but utterly unfit for the butcher's purpose. It is a very common practice to feed young growing pigs upon the refuse of the slaughter-house, in some places, such as the blood and intestines of the slaughtered animals; and in France, many hundreds of pigs are annually fed upon horse-flesh; these pigs grow rapidly, and their muscular frames are finely developed, but they do not become fat, unless they are properly supplied with a liberal portion of non-nitrogenous food, such as potatoes or meal would yield.

As it is only from the nitrogenous constituents that muscle is formed, it has been supposed that the quantities of these substances contained in any given article of food would be a fair estimate of its feeding value; and, under this supposition, Mons. Boussingault has constructed some Tables of the proportion of nitrogen contained in different vegetable substances. The late Rev. W. Rham has published in *The Journal of the Royal Agricultural Society of England*, some Tables of the relative value of different kinds of food as arrived at by practice; but all such Tables must, to a certain extent, be arbitrary, inasmuch as the quantity of these animal substances consumed by the animal must be influenced by circumstances; the animal taking active exercise requiring a much larger quantity, in order to supply the natural waste which would occur under these circumstances, than if the animal was at rest.

We have also seen that the starch, gum, and sugar of the vegetable supplies the constituents by which the heat of the animal is maintained; and as this heat never varies during health, whatever variation may occur in the temperature of the atmosphere or apartment in which they are placed, it follows that the lower the temperature, the larger will be the quantity of carbon consumed in the animal body; this increased consumption arising from a larger portion of oxygen being introduced into the body during cold weather, than when the temperature of the atmosphere approaches nearer that of the animal: hence, animals will consume a larger amount of food during the winter months than in the summer season, and those which are exposed to the chilling blasts of winter, more than those fed in sheltered situations, warmth being equivalent to a certain supply of food. With this remarkable fact before us, we cease to be surprised at the enormous quantity of train-oil and fat which is consumed by the Greenlanders, while the inhabitants of the tropics exist upon fruits and light, farinaceous diet. In the former, the surrounding atmosphere is constantly robbing the body of its heat; while in the latter the temperature of the air approaches so near to that of the body that a

little additional heat is sufficient to maintain the requisite temperature. Exercise, also, by increasing the number of inspirations, introduces into the body a larger amount of oxygen than would otherwise be inspired; and as this never leaves the body without undergoing a change, it follows, as a matter of course, that the greater the number of inspirations taken within a given time, the larger will be the demand for food to supply the consumption in the body. Hence we find that an increase in temperature, with diminished exercise, tends to lessen the quantity of food consumed, and also to increase the weight of the animal. This fact was clearly proved by Mr. Childers in feeding sheep. In this experiment he selected from his flock forty sheep, and divided them into two lots of twenty each; one lot was left in the field, which had a dry and sandy soil; the other lot was placed in a shed, upon a floor made of pine-planks, in order that they might be kept dry, the floor being swept once a day. The experiment commenced on the first of January, when the twenty sheep in the field weighed together 184 stones 4 lbs., while the weight of those placed in the shed was 183 stones 3 lbs.; each lot had as many turnips as they could eat, which averaged 27 stones per day; each sheep was also allowed in addition, half a pound of linseed-cake, and half a pint of barley per day, with a little hay, and unlimited supply of salt. For the first three weeks each lot consumed equal portions of food; but in the fourth week, the sheep confined in the shed ate a less quantity of turnips, by three stones per day, than those in the field; and on the first of February they had gained in weight 21 stones 11 lbs., while those in the field had only gained 15 stones 14 lbs. By the ninth week of the experiment the sheep in the shed had diminished their consumption of turnips two stones more, and also three pounds of linseed-cake per day; and on the first of March the shed-fed sheep had gained 10 stones 10 lbs. more in weight, while the sheep in the field had only gained 8 stones 8 lbs.; and at the end of the experiment, on April the 1st, the shed-fed sheep had gained in the last month 23 stones 15 lbs., or in the three months 56 stones 6 lbs., while the sheep in the field had only gained 12 stones 10 lbs. in the month, or in the three months 36 stones 8 lbs., making a difference in favor of the shed-fed sheep of nearly twenty stones; the sheep in the field consuming the same quantity of food during the whole time of the experiment. In this experiment we have convincing proof that the quantity of food required by an animal will be less in proportion to the increase of temperature; and that when a liberal diet is allowed, but without shelter, much of the constituents of the food will be consumed to keep up the heat of the animal, which would be otherwise stored up in the body as fat, if no such cause of waste existed; and hence to the influence of cold is to be attributed the

difficulty of fattening animals in cold weather, or in bleak, unsheltered situations.

I may here state to you some experiments which were made by that truly philosophical agriculturist, Mr. Morton, at Earl Ducie's farm, at Whitfield, as illustrative of the effects of an increase of temperature and diminished exercise upon the feeding of sheep. In the first experiment five sheep were fed in the open air, between the 21st of November and the 1st of December; they consumed 90 lbs. of food per day, the mean temperature of the atmosphere being 44° of Fahrenheit's thermometer; at the end of this time they weighed 2 lbs. less than they did on the 21st of November. In the second experiment, five sheep were placed under a shed and allowed free motion, the mean temperature being 49° ; they consumed at first 82 lbs. of food per day, then 70 lbs.; at the end of the experiment they had gained in weight 23 lbs. In the third experiment, five sheep were placed in the same shed, but were not allowed to take exercise; they ate at first 64 lbs. of food a day, then 58 lbs., and increased in weight 30 lbs.

Darkness, in combination with rest and warmth, tends mutually to facilitate the fattening process, by removing those causes of excitement which might otherwise exist, and which would tend to an increased consumption of carbon or fat-forming principle in the lungs. It is well known to the practical farmer, that restless animals consume a larger quantity of food, and fatten much slower, than those of a quiet disposition; and as it is the object of the feeder to produce the largest weight of flesh with the smallest quantity of food, all those collateral circumstances should be attended to which will facilitate the attainment of the desired object.

Another important point to be properly attended to in the management of cattle is the regularity of their feeding; inasmuch as the gastric juice is secreted by the glands of the stomach at the accustomed time of feeding; and therefore, if there is no food for it to act upon, it irritates the coats of the stomach itself, producing a degree of inquietude and restlessness which is highly injurious, and tends to check that steady progress of the animal which it is so desirable to maintain. M. Von Thaër, in his work on "The Philosophy of Agriculture," informs us that, in fattening, care should be taken to maintain a uniform and, particularly in winter, a somewhat high temperature. Light must be intercepted; for just in proportion as it keeps up the due health of cattle, so does darkness accelerate the attainment of the required degree of fatness. The repose and contentment—the happy freedom from anxiety, arising from the certainty of receiving their food in proper time and measure—contributes so much to the fattening of cattle that a much more plentiful supply, given irregularly, cannot make up for the want of order. The hour for feeding, and the quantity of food,

may be variously regulated, but a system when once adopted should be strictly adhered to.

The saline and earthy matter contained in the food is by no means an unimportant feature. The animal, it must be borne in mind, requires that the food or plants upon which it lives should supply phosphate of lime for the due formation of its bones, and saline matter for the blood; and it is a truly beautiful provision of Nature, that plants will not grow in soils which are destitute of those constituents required in the economy of animals: hence the advantages which are derived from the employment of such manures as bones, guano, Croggon's and other saline manures, or the urine of cattle, &c., in the growing of our commonly cultivated crops.

The due proportions of which these different constituents of the food are required by the animal, vary at different periods of its growth, and also at different stages of its approach to that degree of fatness which fits it for the shambles.

In the young and growing animal, there will be a much larger demand on the food than there would be in after-life. The muscles require to be enlarged by the addition of more gluten or muscle-forming principle than would be necessary to compensate for the natural waste which is continually going on in the body, and the food must supply an increased quantity of phosphates for the growth of bone; the lungs are more active, and a greater number of inspirations are made in a given time, by which more carbon is consumed: hence the necessity of supplying the growing animal with a richer and far more nutritious diet than would be required by the adult, and of feeding at shorter intervals.

Nature has prepared in the milk of the maternal quadruped a species of food suitable to the wants of the young animal; and a glance at its composition, which is pointed out by chemical analysis, will soon convince us how admirably it is adapted to fulfill the purposes in the animal economy:

TABLE IV.
COMPOSITION OF MILK.

Butter	27 to 35
Casein or Cheese	45 to 90
Milk-sugar	37 to 50
Phosphate of lime	3 to 10
Salts	7 to 10
Water	881 to 805

The sugar of milk, with the butter, supplies the materials which are consumed in the lungs of the young animal, by which the animal heat is properly kept up. The casein, or cheesy matter, yields the materials for the growing muscles, and the gelatine of the bones; while the phosphate of lime, dissolved in the water, supplies the earthy matter for the bones. The quantity of milk, and the proportions of the ingredients which it contains, vary with circumstances, such as the breed of the cow, the food with which she is supplied, the time of her calving, her age,

and state of health. It is also materially influenced by the temperature of the atmosphere; warmth producing similar effects on the composition of the milk as on the fattening of the animal; the colder the air, the less butter will the animal yield in her milk. This fact is well known to farmers, the cause being the larger consumption in the lungs of the animal (to retain its heat against the cooling influences of the external air) of those principles in the food from which the butter is formed. As an illustration, I may quote an account of an experiment made under the directions of that practical agricultural chemist, Mr. Gyde, and which is well worth your notice.

"Six cows, during the warmest part of the summer of 1844, when in the field, yielded, on an average, 14 quarts of milk each; as the season advanced and the weather became colder, the quantity of milk steadily diminished, and of course with it the butter. In the early portion of November, four of the six cows were placed in a house, the floor of which was boarded in order to keep them dry. Light was nearly excluded, and the mean temperature of the house was kept at about 55°, the animals having barely enough room to lie down in their stalls; their diet was composed of cut turnips, hay, chaff, and a little ground lentil mixed with the chaff. For the first few days the animals were evidently uncomfortable in their new habitation, and their yield of milk diminished. At the expiration of three weeks the milk had again increased, and the quantity given was equal to that of the best yield of the summer. By the middle of December—the cold being then intense in the open—the cows gave 18 quarts each of rich milk, from which a proper quantity of butter was made. Animals when yielding milk require a richer food than when they are dry, since it is from the food taken that they are enabled to secrete their milk; and if their food does not contain a sufficiency of the elements required, the milk is less nutritious: hence the growth of young and suckling animals is less rapid, and its future health and strength of constitution suffer by the treatment which it receives when young. When sheep are fed upon turnips, and in winter, during the time they are giving suck, it is an excellent plan to allow a portion of oil-cake, or linseed, or pea or bean meal, as part of their daily food; such addition greatly improves the secretion of milk, the lambs grow rapidly, and fatten much earlier than when no such addition is made, and the sheep are found to be in much better condition in the spring. In the rearing of calves, likewise, it is desirable that they should have the whole milk, and not be supplied after the first two or three days with milk that has been skimmed, as is the custom in some parts of England. The practice of the late Earl Spencer, in feeding calves, was to allow them the unskimmed milk for the first three months, and afterward to give them skimmed

milk for the first three months, and afterward to give them skimmed milk mixed with barley or oatmeal; this practice was found to succeed remarkably well; but I am inclined to believe that pea or bean meal mixed with linseed would have probably been better than oat or barley meal, since the bean and pea contain vegetable casein, which is identical in composition with the casein of milk, and forms an admirable substitute for it; while the soluble gum and mucilage of the linseed would be the more easily acted on by the stomach of the young animal than the insoluble starch of the oat or barley.

In fattening calves for veal, attention should be devoted to the production of fat animals of moderate size, veal of this description being most sought after by the epicure. The animal should be kept perfectly quiet, and placed in as warm a situation as convenient, that there may be as little loss of the fat-forming principle as possible; and a gloomy situation, not amounting to actual darkness, is found, by experience, greatly to assist the above means, by inducing tranquillity and a disposition for sleep. The food should be rich, and regularly supplied, and the strictest attention to cleanliness should be observed. Bleeding is occasionally resorted to by some feeders, and its effect is to check the too rapid development of muscle, while it does not interfere with the regular accumulation of fat in the body. Animals intended for stock should be allowed free exercise, that their muscular frames may be well developed; and their food should be of a nutritious character, containing sufficient gluten to supply the full demand of their growth. They should have sheds to go into at night and during rain, with a dry bed to lie upon; animals which are so treated will grow rapidly, fatten much faster when required, and be of a stronger constitution than those fed upon coarse, inferior, and unwholesome food, which is unfit to supply the demands of the system, producing an imperfect development of the animal frame, and not unfrequently engendering diseases of a troublesome and frequently a fatal character.

Time, gentlemen, warns me to conclude. I have endeavored to detail in a few words, what is known on the subjects by our best animal physiologists, who have applied their theories to the rearing and feeding of cattle. If, by the knowledge I have imparted to you in this Lecture, you are enabled to promote your own interests, and that of the public, by better regulating the treatment of your live-stock, I shall not have addressed you in vain. I am the theorist, you are the practical men; your practice and my theory (or rather the theories of sound philosophers) combined, cannot, when properly managed, but conduce to your own pecuniary benefit, and that of mankind in general. Accept my thanks for your kind attention, and, for the present, I respectfully say, farewell. H. W. D.
[The London Plough.]

LECTURES ON BOTANY.*

COURSE OF LECTURES ON BOTANY IN REFERENCE TO AGRICULTURE.

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LECTURE II.

OUR preceding Lecture was dedicated to the detail of a few of the advantages that have already resulted from the knowledge of a simple fact in vegetable physiology, namely, the influence of the external organs or parts of the flower in the production of the seed. It is a subject on which we might dwell at much greater length, as manifesting the vast importance of a branch of study that the practical cultivator, regarding it generally in the light of an abstract science, has hitherto considered rather as an amusement for the idle speculator, than as intimately connected with the practice of his profession, and illustrating those processes of his art that have been established by the slowly accumulated experience of himself and his predecessors. But this early stage of our inquiry is not the fitting place to extend our remarks upon the action of organs whose operation can scarcely be comprehended without reference to their own ultimate structure—in other words, to the minute organs or vessels of which they are themselves built up; and this observation applies not only to the flower, but to every part of the vegetable fabric: every product of the plant, whether cultivated for food or as adapted to the other almost innumerable wants and purposes of man—nay, its very existence—is dependent upon these.

A vegetable is a living being, and, as such, is made up of parts or members, all more or less influencing each other, and united and simultaneous in their operations for the growth and preservation of the whole. Some parts, when cut through, appear solid to the naked eye, others present a minutely porous appearance; but under a microscope or strong magnifying-glass the apparent solidity of the hardest and closest wood disappears. It is in these small and all but invisible cavities that the vital functions of the being before us are to be traced; it is here that are elaborated the starch, the gluten, the gum, the sugar, and the other proximate principles of our food; here are formed the tannin, the dye, the medicine; the production of the wood, the bark, the differing fibre of the flax and cotton, and the increase of the universal substance of the plant itself, are all of them processes dependent upon the economy of these mysterious recesses. The prying eye of curiosity is sometimes at fault in its endeavors to penetrate the sources of organic action, but a glance is often sufficient for the speculative

mind of man to work upon and form a hypothesis which a second will enable him to improve into a theory, and although we positively know but little, that little enables us to assume a great deal, and this is especially the case as regards the science of Vegetable Physiology, or that which treats of the natural laws regulating the growth of plants and their productions, as just referred to. In giving you a general outline of the action of these laws, and endeavoring to explain the structure through which they operate, I shall avoid as much as possible reference to what is merely supposititious, relying upon the statement of facts, and such conclusions as, though in our present state of knowledge they are incapable of being positively demonstrated, are still so closely accordant with what we really do know, that, until they are contradicted by facts, we are justified in regarding them as such themselves.

Divide the stem of any common plant—transversely or crosswise, and examine the section with a microscope, it will present the appearance of net-work, the meshes of which are of various sizes and figures, some perhaps regularly hexagonal, or six-sided, like the cells of a honey-comb, others more irregular, others square, and some circular; the circular ones are generally disposed in groups, which are sometimes scattered, sometimes arranged at corresponding intervals in a concentric manner. If we divide the same stem perpendicularly, or lengthwise, we find the angular meshes presenting a nearly similar appearance, showing them to be small, membranous cells or cavities, while the circular ones are discovered to be sections of little tubes, more or less elongated, and narrowing toward each extremity so as to terminate in a point, and farther that they are disposed in longitudinal layers, or thread-like bundles. These cells and tubes are denominated the elementary organs of the plant; and minute examination of them shows that, independent of differences in form, size, and disposition, they vary greatly in structure, and are probably subservient, in consequence of that variation, to the performance of different functions; these functions, however, are, in our present state of knowledge, very imperfectly understood; of many, and those perhaps the most important, we are altogether ignorant; while others are little more than surmised from their apparent connection with some obvious fact in vegetable growth, such as the

* Continued from page 377, Vol. II., Monthly Journal of Agriculture.

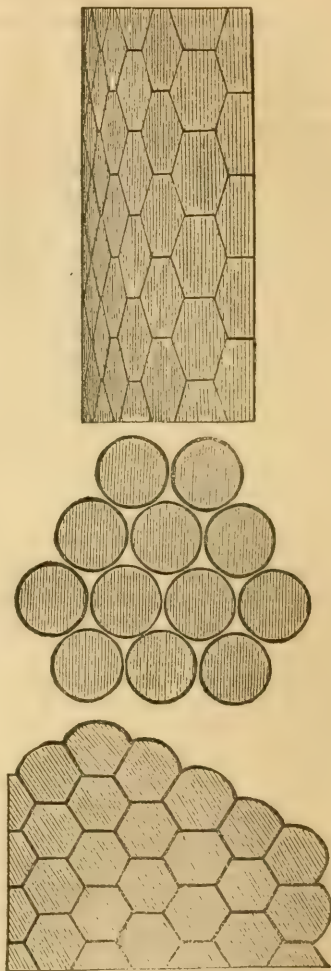
rise and distribution of the sap, &c. So very minute are the elementary organs of plants individually, and so obscurely revealed are their physical phenomena, even with the assistance of the most powerful microscopes, that few observers agree in their accounts of either, beyond the admission of certain general facts.

The simplest definable form of the vegetable tissue or substance appears to be the cellular, namely, that presenting in division the angular meshes just referred to; each of these meshes is the section of a cell, consisting of a very delicate transparent membrane, rudimentally globular, but assuming different figures in consequence of being pressed upon by others in the growing plant; when equally pressed on all sides by similar cells, the globe becomes twelve-sided, and of the form denominated by mathematicians the rhomboidal dodecahedron, which being divided in either direction, presents a hexagonal outline, resembling the cells of a honey-comb; where the pressure is unequal, the regularity of the cells is variously affected and distorted, and they become more or less oblong and rectangular, or present such a diversity of figures in different plants, and in different parts of the same, that the delineation of them would require a far greater space than our confined limits will admit, or the subject before us justify the dwelling upon, where a hasty outline will answer the end proposed, without entering into minutiae belonging to the more abstruse and philosophical portion of the science. Cellular tissue constitutes a very considerable portion of the substance of all plants; the pith is wholly composed of it; so is by far the greater part of the bark, and the external covering of the more delicate organs; while, filling up the interstices left by the disposition of the woody and other tubular tissue, it seems to be almost analogous to fat in the animal economy, and, like that, increases so much, under certain circumstances, as to alter materially the general aspect and condition of the plant; it is indeed that part of the vegetable fabric that is the most influenced by cultivation. The magnified views in fig. 1 will convey some idea of the arrangement of the cells, and especially of the origin of their angular outline, which is very beautifully seen by the assistance of a microscope, or even by a good magnifying-glass, in a thin transverse slice of the stem of the common raspberry, or that of any other plant in which the pith is not invested by a very thick cylinder of wood. The size of these little cells varies from the fiftieth to the thousandth part of an inch in diameter, their average bulk being about midway between these estimates. In the earlier stages of their existence they are filled with a fluid in which a multitude of little colored bodies, only visible under a very high power of the microscope, are seen floating with greater or less rapidity—a phenomenon apparently as intimately connected with that of vegetable life

as are those of the lymphatic and arterial canals to animal existence.

Cellular tissue has been justly denominated the basis of the vegetable fabric. The sim-

Fig. 1.



CELLULAR TISSUE.

plest of all known plants exists as a single globular or oval cell; those a degree higher on the scale are composed of similar cells, more or less elongated and attached end to end like the beads of a necklace; then come others more complicated by the attachment of cells in breadth as well as length, the lower or meaner of which present mere shapeless or irregular masses, while the remainder of the series, ascending by successive grades of structure, may be traced by the eye of the naturalist through a thousand varied and improving forms, so beautiful, so admirably

adapted to the fulfillment of the offices allotted to them by Providence, as to force themselves upon the attention of man, though too distantly connected with his immediate interests to admit of his due appreciation of their value. Under myriads of modifications, which our space will not permit us to investigate, this tissue constitutes the whole substance of the lichens, sea-weeds, mosses, and other allied and equally neglected families of plants. However different in appearance such cells are from the little tubes with which they are found associated in all the nobler classes of vegetation, there seems at present to be scarcely a possibility of question that the latter are not merely the results of their super-development; in other words, that the tube, under whatever form it may exist, is but an elongated cell, or the breaking of the cavities of several into one. These, however, are speculations that we may hereafter refer to more particularly; let us look previously at the tubes themselves, and note what is known or understood respecting their uses in the economy of the growing plant, and first at those which compose the principal substances of the wood, its harder and tougher portion, called woody fibre.

Fig. 2.



WOODY FIBRE.

If the diameter of the cells just described is so small that without assistance from the microscope we are generally unable to distinguish their cavities, that of the woody tubes is frequently much less, and in some plants not more than the five-thousandth of an inch. Fig. 2 represents a small fragment

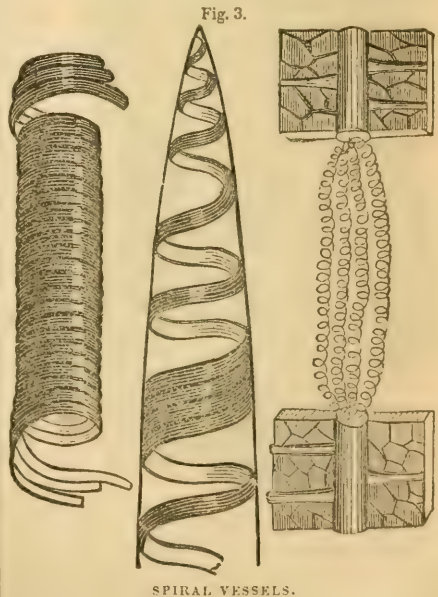
of oak wood highly magnified, showing it to consist of such tubes closely disposed upon each other, so as to occupy the smallest possible space, and leave no openings between them, the narrow, tapering or attenuated extremities of each generally lying between the broader portions of those that lie around them. These tubes extend in the form of continuous bundles or layers from one extremity of the plant to the other, sending out branches into the leaves and other subsidiary organs, and giving strength to, and maintaining communication between all its parts; they constitute the channels through which the sap ascends and is distributed, a fact readily ascertained by cutting into the stem or branch of a vine, birch, or any other tree in the spring, when that fluid may be traced as flowing from the mutilated vessels of the wood. The passage of the sap through this medium, though certified by long observation and repeated experiment, would appear to those who examined the vegetable texture for the first time, or without a previous acquaintance with the natural phenomena connected with organization, as an inexplicable mystery, no apertures being discernible under the highest powers of the microscope, through which the cavities of the woody tubes communicate with each other. The discovery, however, by Mons. Dutrochet, of the permeability of vegetable and animal membranes, or that they are capable of transmitting fluids through their substance, although destitute of any apparent passage of communication—a phenomenon to which he gave the name of *Endosmosis*—has contributed greatly to the elucidation of this and other physiological facts, that were as stumbling-blocks to the philosophy of our forefathers. The demonstration of this important fact is easy, and within the reach of those even whose means of scientific inquiry are the most limited, as instanced in one of the earliest experiments of Dutrochet himself: he filled the swimming-bladder of a carp (any other small bladder will answer the same purpose, and any fluid heavier than water) with a thin solution of gum, and, placing it in a glass of water, observed that the bladder swelled out and became heavier, in consequence of the water being attracted through its substance by the weightier fluid within: he reversed the experiment by filling the bladder with water, and placing it in the mucilaginous solution, under which circumstances it lost weight, by the water passing out instead of in. It was afterward ascertained by numerous experiments that plants placed in water draw it up through the thin tissue of their cells and woody tubes, and acquire a great increase of weight, which they lose again, at the will of the experimenter, by simply adding to the water in which they stand some soluble substance, sugar, for instance, that renders it heavier than their contained juices. The force of this attraction, and of course the facility with which the fluid passes, is very

considerable; water holding half its weight of sugar in solution raised pure water through membrane with a power capable of sustaining the pressure of a column of mercury of 127 inches in height, a power nearly four and a half times greater than the pressure of the atmosphere which sustains the mercury in the barometer and raises the water in a common pump. On the cause of this curious phenomenon philosophers are not agreed: it is probably only one of those numerous instances that are from time to time brought to light by inquiry into the hidden processes of Nature, of the general tendency of matter to maintain an equilibrium among its particles; but the permeability of the vegetable membrane being established, it is not necessary to our present purpose to pursue the subject farther: we have only to consider, as a natural consequence of the development of the living plant, that the sap becomes thicker as it ascends from the root, drawing after it the thinner and more recently imbibed fluid, to account for its successive rise through the minute vessels above described—a rise so rapid that several quarts or even gallons are obtainable daily for weeks together by tapping the trunks of some tropical trees.

The fibre of hemp, flax, and of many other plants employed in different parts of the world in the manufacture of cloth, cordage, &c., consists of these woody tubes; and some idea of their extreme tenuity may be formed from the examination of the finest flaxen thread by a microscope, which shows it to consist of a considerable number of tubes. The membrane composing them, though delicate and transparent, possesses much strength and elasticity in most plants, and in all cases is greatly superior in that respect to cellular tissue, the membrane of which is comparatively brittle; the difference in the strength of cotton and linen thread is an instance of this, the former being cellular, the latter woody tissue. The wood of the fir tribe appears to be very dissimilar to that of ordinary trees and herbs, the tubes being marked with dots or apparent pores, surrounded by a series of concentric circles; similar markings are observable in the woody tissue of a few other tribes, but only such as, like the plants in question, produce aromatic or resinous secretions, whence they have been generally regarded as glands; their structure is, however, at present very imperfectly understood, and not anything is known respecting their functions; if really openings, they constitute a remarkable exception to the closeness of the corresponding tissue in other plants.

The name of duct has been given to various comparatively large tubes or vessels, generally associated with those of the wood, but always distinguishable from them by their greater diameter. The large pores, frequently observable by the

naked eye in a transverse section of wood, are the divided cavities of the vessel so called, which are sometimes distributed through the layers of wood, but more commonly form themselves distinct layers or bundles. Many vessels of different structure have been confounded under the general name of duct; and being wholly unacquainted with their offices in the economy of the plant, much diversity of opinion exists among physiologists respecting their classification and relative uses. Some are angular, and very evidently formed by the breaking of cells longitudinally into each other, or by the absorption of the dividing membrane; others are dotted with apparent pores; a third kind are more or less distinctly marked with spiral lines, sometimes continuous, occasionally broken at irregular intervals, as though a spiral thread contained within a membrane had had its coils separated and ruptured in places by the longitudinal growth or extension of the membrane; a fourth series, called annular ducts, consist of concentric rings, or perhaps of the coils of spiral threads so broken as to present the appearance of such, and held together by the membranous tube containing them. These larger tubes are disposed in a similar manner to the smaller ones of the wood, and resemble them in being more or less narrowed or conical at their extremities: several of their forms, and there are some intermediate between those described, approach so nearly to the following form of tissue, that it is difficult to conceive



them other than more imperfect or disurbed modifications of the same, viz., the spiral vessel.

This last form of the vegetable elementary organs consists of one or more filaments coiled spirally within a very delicate membranous tube, similarly attenuated toward either end as are those of the wood and the duct, but, unlike the spirals apparent in some of the latter, capable of being drawn out like a spring, when the part containing them is broken. They are very advantageously seen by breaking carefully across the leaf of a rose or strawberry, or the young brittle shoot of the rose, and drawing the parts slowly asunder, as exhibited in fig. 3. The spiral coils are in most instances so close together as to appear to form the tube, and the membrane which invests them is so exceedingly fragile as to break between each coil of the spire when it is drawn out, so as not to be readily discernible unless occasionally when the extremity of the filament is relaxed, as represented in one of our figures. Each spiral is generally composed of a single filament or thread, but in some plants the number of parallel fibres twined in the same direction is considerable; one of the figures exhibits a magnified view of a portion of such a vessel from the stem of a banana, consisting of three threads or fibres; but in this, and many other plants of the same and allied orders furnished with compound vessels, there does not appear to be any regularity in their production. De Candolle remarks that the number of threads composing each spiral of the plant just referred to varies from seven to twenty-two; but they are sometimes formed of a single thread, and I have found in the same portion of the stem no fewer than eleven different modifications of these curious vessels, varying in the number of their threads from two to twenty-nine, the largest number which has, to the best of my knowledge, been met with in any plant. The size or diameter of the spiral tube is exceedingly variable, the largest being about the three-hundredth or four-hundredth of an inch, while in some cases they are not above the two-thousandth or three-thousandth. They are variously distributed, but chiefly in the young stems or shoots, in which they occupy that cylinder of woody substance that immediately surrounds the pith, called the medullary sheath, and in the stalks and veins of the leaves and other organs which are modifications of them and originate from the sheath in question. They are of very rare occurrence in the root, and still more so in the bark and the true wood, or that which in after periods of growth forms around the first year's layer. Where the tissue of the stem is not stratified, and the pith or cellular substance does not form a separate cylinder or column in its center, as in the liliaceous orders, palms, and others belonging to the same great natural class, the spiral vessels accompany the bundles of woody fibre and ducts that lie dispersed through its mass, and are present often in such abundance as to constitute the most remarkable feature in their internal structure;

from the stems and bases of the large leaves of the banana and plaintain they may be drawn out by the handfull, and in the West Indies are sometimes collected in this way for tinder.

The use of the spiral vessels in the vegetable economy is, like that of their other minute organs, rather to be surmised than demonstrated. A very general opinion, from the earliest period of their discovery, regarded them as organs of respiration; hence their denominations of "trachea" and "tracheuchyma," alluding to their supposed correspondence in function with the trachea (or windpipe) and air-tubes in the lungs of an animal; to those of insects their structure presents a remarkable parallel. They are generally filled only with air; and although instances may occur in which they are "gorged with fluid," such instances are rare, and probably either accidental, or arising from one of those morbid changes to which the minuter portions of the vegetable fabric are unquestionably liable, although their causes are hidden in consequence of our imperfect knowledge and slender means of inquiry. The opinion, however, founded only upon analogies that may be rather fancied than real, seems of late years to have been gradually losing ground in the estimation of some of the best physiologists, although they have been hitherto incapable of substituting a more plausible hypothesis; and the principal argument that can be adduced against that previously entertained, consists in the fact that the spiral vessels of plants are not in immediate connection with the surface pores or stomata, nor even with the air-chambers with which the latter communicate, and hence differ from those accompanying the breathing apparatus of an insect. When, however, we reflect upon the permeability of the vegetable membrane to a comparatively gross fluid like the sap, the passage of one so thin and infinitely more diffusible as air can scarcely be denied, even though it had to penetrate to a much greater depth than to the interior of a leaf, an organ the structure of which is so strictly accordant with its supposed and almost experimentally-proved function as the vegetable lung.

Under whatever conventional name the elementary organs are known, however great the apparent difference of their structure, and diversified their functions or offices, the deep and unwearied researches of modern naturalists aided by the increased powers of observation placed at their command by the improvement of the microscope, have led to the conclusion that they are all only so many modifications of the cell, while the wall of the cell itself is probably merely consolidated mucus, assuming the form of membrane or fibre, according to laws of which we are at present ignorant. That changes take place of one kind of tissue into another, at different stages of the growth of the plant is unquestionable, as well as that such changes are correspondent with alteration of function; but it is no less

certain that the simple cell contains the rudiments necessary to the formation of the other organs, and especially the spirals, which in their most perfect state appear to be the most complicated of the whole series. "There is no doubt," observes Dr. Lindley, speaking of the different kinds of vegetable tissue, "that all these forms are in reality modifications of one common type, viz., the simple cell, however different they may be from each other in station, function, or appearance. For, in the first place, we find them all developed in bodies that originally consisted of nothing but cellular tissue; a seed, for instance, is an aggregation of cells only; after its vital principle has been excited, and it has begun to grow, woody tissue and vessels are generated in abundance. We must, therefore, either admit that all forms of tissue are developed from the simple cell, and are consequently modifications of it; or we must suppose, what we have no right to assume, that plants have a power of spontaneously generating woody, vascular and other tissues, in the midst of the cellular." Mirbel has lately reduced the first of these suppositions to very nearly a demonstration; in a most admirable memoir on the development of *Marchantia*, he speaks to the following effect: "I at first found nothing but a mass of tissue composed of bladders filled with little green balls. Of these some grew into long, slender tubes, pointed at each end, and unquestionably adhering by one of their ends to the inside of the sac; others from polygons passed to a spherical form in rounding off their angles. As they grew older, other very important changes took place in certain cells of the ordinary structure, which had not previously undergone any alteration; in each of these there appeared three or four rings placed parallel with each other, adhering to the membrane, from which they were distinguished by their opaqueness; these were together analogous to annular ducts. The cells which became tubes did not at first differ from other cells in anything except their form; their sides were uniform, thin, colorless and transparent; but they soon began to thicken, to lose their transparency, and to be marked all round from end to end with two contiguous parallel streaks disposed spirally. They then enlarged and their streaks became slits, which cut the sides of the tubes from end to end into two threads, whose circumvolutions separated into the resemblance of a gun-worm." In these cases there can, I think, be little doubt that the changes witnessed by Mirbel were chiefly owing to the development of a spiral thread in the inside of the tissue.

There is much diversity of opinion as to the mode in which the elementary organs of vegetables are multiplied during the advance of growth, and the rapidity with which that growth proceeds in certain plants is such as to render actual observations as to its source exceedingly difficult; speculation has therefore sometimes taken the lead where

sober inquiry has proved at fault, pointing at results almost too startling even for human imagination to receive as truth; and yet, when we contemplate from day to day the increasing size of many plants in ordinary cultivation—a gourd, for instance, or vegetable marrow, adding to its circumference nearly three inches in the course of the twenty-four hours, and the stem which bears it extending its length between five and six inches during the same period, common sense would pause ere it questioned the truth of records much more marvelous. The rapid growth of the common mushroom has become proverbial, but some other individuals of the class of fungi greatly exceed it in that respect; the *Phallus* or stink-horn sometimes elevates itself six inches from the ground in the space of an hour; the *Bovista gigantea*, or great bull puff-ball, is recorded to have grown in the course of a single night from a mere point to the size of a large gourd, the actual measurement of which is not mentioned, but on a moderate computation of the diameter and number of the cells, it has been estimated to have increased at the rate of 4,000,000,000 of cells in every hour, or upward of 66,000,000 in a minute. It is true that much of this enlargement may have arisen from the distention of the cells individually; but even if this be admitted, the force of development and the vast increase of weight, which can only be accounted for by an appropriation of nutriment so rapid as almost to elude conception, leaves sufficient of the wonderful to impress upon our mind a just idea of the grandeur of that vital energy which inspires and regulates the growth of bodies thus low in the scale of organic nature.

The force with which the minute organs above described are produced and enlarged is no mere supposition, but a fact within the reach of attestation by those who will condescend to observe its operation; the root of a tree descending through a crevice will break and dislocate the hardest rock; cellular tissue, not harder in substance than pith, has elevated a weight with the power of a lever; the latter effect is not unfrequently seen in the growth of fungi under stones and heavy blocks of timber; and the following anecdotes, both, I believe, referring to the same circumstance, and copied from the *Hampshire Advertiser* of July, 1830, are recorded by Professor Burnet as affording a striking instance of this power: "At different times, several of the stones in the pavement in the town of Basingstoke, were observed day by day, to be rising gradually from their beds, until they were some inches above the ordinary level; under one of these, which weighed seven pounds, a large mushroom was found, that measured a foot in circumference." The other case is recorded by Mr. Joseph Jefferson, who says: "A toadstool six or seven inches in diameter, raised a large paving-stone an inch and a half out of its bed; and the mason who had the contract for paving was much enraged at the idea that a weak fungus

should have lifted so heavy a weight. But his uneasiness was much increased, and even his alarm excited, when, about a month after the injury had been repaired, the adjoining stone was lifted in a similar manner, and two mushrooms, not quite so large, were found beneath it; for it seemed doubtful whether the whole town of Basingstoke might not want repaving during the term of his contract. The stones were nearly of the same size; each being twenty-two inches by twenty-one; the last stone raised in this manner was weighed, and its weight proved to be eighty-three pounds." The hardest of such fungi are, in the growing state, so soft as to yield

to the pressure of the finger, and so brittle as to be shivered to atoms by the slightest blow; yet the organic force with which their tender tissue is developed is capable, acting in millions of points, in the growth and distension of their individually invisible cells, of elevating an inert mass of stone which the strength of an ordinary man would with difficulty raise from its plaster bed.

Such are some of the facts connected with the minute anatomy of plants, the farther examination of which, and of the laws of their growth, will furnish the subject of a succeeding lecture.

PLANT MORE TREES.

UNDER the above head the Farmer's Monthly Visitor has a capital article, from which we learn several interesting facts. The editor truly remarks that "Valuable pine timber lots are now grown, whose origin was in the seed less than fifty years ago." The opinion has pretty generally prevailed that pines grown by artificial culture are nearly worthless for timber. We see no reason why this should be so, any more than oak, chestnut, or ash. Mr. H. remarks that "Nature does everything to make up for man's neglect in the planting and growth of trees; nor is she slow in her operations. She has made every acre of waste land in New-Hampshire valuable. The beautiful chestnut timber so much used in the New-England railroads grows spontaneously in all our poorest rocky lands which have been considered too hard for cultivation; the railway chestnut cross-timbers are worth, standing, on the average, sixteen cents apiece—trees of the suitable size making sometimes three and four cuttings. It is said these chestnut trees will grow to the suitable size of posts in the years that these posts rot in the ground. A remarkable feature in the chestnut is that where a main tree is cut, sprouts the same year shoot forth from the roots, growing up a clump of trees, some three to six of which soon grow into sizes to be used for timber."

We have had some little experience in attempting to raise a small forest of chestnut timber from the seed, but with poor success. We have been told that the seeds should never get dry after they ripen in the fall, before they are planted, either in pots or a nursery. Such is the demand for fence posts and railroad ties that the culture of chestnut timber, we are confident, can be made profitable. Every farmer has a wood lot, and as

he thins it out, or cuts it off, he should set the ground full of small chestnuts. Under favorable circumstances they grow rapidly.

It is safe to calculate on the growth of a cord of wood on an acre per annum in Western New-York. This, at \$2, is much better than no income—while the annual burden of leaves that fall to the earth enrich the land.

Shade trees are equally an ornament and luxury during the intense heat of our summer months. Speaking of these the Visitor says: "We boast in the southerly part of the Concord Main-street as beautiful elms as can be shown in any part of the world. There are many charming villas in the country range about Boston; but we must say of these that their cleaned path avenues shaded and covered over by trees high before reaching the limb, or surrounded by the shrubbery which entirely shuts out access of foot or of eye, do not compare with the unadorned beauty of the row of elms opposite on the street to the place of our writing. There is a remarkable similarity in the spread of the isolated elm, which is a native of our intervalle and stands either on that or the first upland of the river bank. The men who set out our stately elms seventy-five and a hundred years ago, Hall, Shute and others, have passed away: at this season, when hundreds of birds come there and build their nests, the elegant gold-robin, the gay bluebird, the chattering wren, and even the shy crow, blackbird, the snarling cat and scolding thrush both sing so beautifully and so alike when undisturbed as to be mistaken each for the other—there is a charm in these venerable trees which bids us remember those who planted them there, and to present them as proof that planting trees is one of those "good deeds" of men which "live after them."

TO CURE THE DISTEMPER IN HORSES.—Give a teaspoonfull, three times a day, of finely powdered gum myrrh, (mixed with the food or otherwise,) and a speedy cure, it is said, will in all cases be effected.

DAIRY HUSBANDRY—THE DAIRIES OF HOLSTEIN.

THE use of steam every year for a greater variety of purposes, the laying down of rail and plank roads, and opening canals, are working revolutions in the industrial economy of all sections of the country. This liability to change of circumstances requiring corresponding changes in the habits and pursuits of different localities, imposes the necessity for a greater variety of knowledge—that is, for a practical knowledge of a greater number of pursuits than formerly.

A grazing district this year may next year be converted into a farming one by being penetrated by a railroad and presented with facilities for transportation which it had never before enjoyed. We have long been impressed with the belief that, along with their fine climate, and cool fountains, and fragrant herbage in the mountain regions of the Southern States, there should be large flocks of sheep and ample dairies for the manufacture of butter and cheese—articles that, if well made, will bear to be kept until remunerating prices will pay for producing and sending them to market. To some of our patrons who entertain the same views—in fact to every curious and polite inquirer, we feel persuaded we may be making an acceptable offering in the following paper on

THE DAIRIES OF HOLSTEIN.

HOLSTEIN butter is said to be (with the exception of that made in Holland proper) the best in the world. It may not be uninteresting to our readers to describe the process adopted in that Duchy for making that valuable article.

The Duchy of Holstein (together with the Duchies of Schleswig and Lauenburg) lies in a favorable position for commerce, being bounded by the Elbe and the German Ocean on the west, and by the Baltic on the east, while a ship canal unites the two seas. The climate is temperate, inclining to moisture; it does not materially differ from that of the midland country of England, except that the cold is more steady and severe in winter, while the summers are warmer and drier. The night-frosts in April and May are the most unfavorable circumstance affecting the interests of Agriculture; they are felt more than in England because the heat of the sun in the daytime is greater and the contrast, therefore, the more prejudicial. The soil is rich, and often receives accessions from the depositions of the river Elbe. The peculiarities of management in the Holstein dairies relate to the buildings and utensils; to the time of milking and number of hands employed; to the management of the milk; and to the mode of working, salting and packing the butter. These have been described by Mr. Carr in a communication to the Royal Agricultural Society, and may be thus shortly stated:

The buildings on a large dairy are a milk-cellar, a butter-cellar, a churning-house, with a horse-mill adjoining, a cheese-room and a kitchen, in which the utensils are washed and food is cooked for all persons immediately engaged in dairy work; to which are sometimes added their sleeping-apartments. The size and situation of the milk-cellar are deemed of great importance: it fronts the north, and is shaded from the summer sun by rows of trees, the elder being chosen especially, and planted as near the windows as possible, on account of the influence of this tree in keeping off insects. A thatched, projecting roof affords protection from the heat, and great care is taken in choosing the site of the dairy to place it out of the reach of anything that might taint the atmosphere. The size of the milk-cellar is regulated by the number of cows, but it is generally calculated to contain the produce of four milkings. The milk-dishes are placed on the floor, and usually occupy the space of two feet square each. Thus the produce of one hundred cows giving on an average eight quarts per day, would fill fifty milk-dishes at each milking, and would require a ground surface of five hundred square feet, as there must unavoidably be space left to enable

the dairy-maids to go through their various operations. The floor is sometimes flagged, but oftener of brick neatly fitted, so that no water may lodge in the joints, and always gently inclined, with a grating at the lower end to facilitate the washing of the floor, which is never omitted to be done twice a day, notwithstanding that every source of impurity is guarded against and every drop that may fall at the time of the milk being strained is carefully wiped up. A recent improvement is the dividing the floor into compartments with brick ledges from three to four inches high, between which the milk-dishes stand; the lower extremity of these compartments is fitted with a small sluice, and twice a day they are filled with cold water from a pump. Thus the milk is preserved so cool as to prevent all approach to acidity for several hours longer than when placed on a dry floor. In sultry weather a piece of pure ice is sometimes dropped into each milk-pan, or a pailfull of ice is placed in the dairy, which, by absorbing the heat, sensibly lowers the atmospheric temperature.

The best milk-cellars are sunk from three to four feet in the ground; they are from sixteen to eighteen feet high, with an arched roof, and two rows of windows looking north, east and west, to secure a thorough air. The lower range of windows consists of wooden trellis-work, provided inside with gauze frames, to exclude insects, and outside with hanging shutters, which can be lowered and elevated at pleasure. The upper range is furnished with glass sashes, which are exchanged for gauze frames when greater coolness is needed.

The butter-cellar also is light, airy and cool; it is likewise sunk in the ground and supplied, by the same means as the milk-cellar, with plenty of pure air. Here the butter, when carried from the churning-house, is worked, salted and packed. The filled butter-casks are ranged on clean boards a little elevated from the floor, to allow of a free passage of air, and are turned and wiped every week. Next in order comes the churning-house, which has much the same arrangements as we find common in England. Of late years the perpendicular movement of the churn-staff has been exchanged for the rotary, which is found to churn in a shorter time, and with less risk of oiling the butter. The cheese-room in these dairies is placed as far as possible from both the milk and the butter-cellars.

The persons required to conduct the business of the dairy are an overseer, a cooper, one or two cowherds, one or more swineherds, an upper dairy-woman, and dairy-maids in the proportion of one to every eighteen cows. The overseer takes care of the cattle, and is expected to know their diseases and the remedies. He is responsible for the conduct of the swineherd and cowherd, and superintends the fattening and rearing of calves. He also sees that the milking is thoroughly performed. When the number of cows does not exceed a hundred, he also undertakes the cooper's work; but in large dairies a cooper is kept in addition, who, besides his particular duties, assists in carrying the milk, feeding the cows when housed, &c. The wages of these two persons vary with the extent of the dairy, but may be averaged at sixty dollars for the first and forty for the second per annum.

The dairy-maids, besides milking, cleaning the vessels, &c., work in the garden in summer, spin in winter, and wash, bake, brew and cook for the establishment under the direction of the upper dairy-woman, who is by far the most important personage therein, as on her skill, attention and diligence depend, in a great measure, both the quantity and quality of the product. She must not only thoroughly understand, but accurately observe, the moment when the milk should be creamed; the degree of acidity it must attain in the cream-barrels; its temperature, whether requiring the addition of warm or cold water to the churn; as well as the subsequent operations of kneading, beating, salting and packing the butter. She must be punctiliously clean in her person and work, and require the same cleanliness of her maidens. In large establishments the upper woman has full employment without milking, and even requires assistance in her own department; but in smaller dairies she milks about ten cows. Her wages are from fifty-five to sixty dollars per annum, while her chief assistants receive twenty-two and the rest eighteen dollars.

During summer the dairy people of Holstein rise at three, or even two, in the morning, if the weather be very hot; for which exertion they are allowed two hours' sleep in the middle of the day. The milking is carried on in the field,

generally commencing at four, and lasting two hours. Each girl marks her own cows, by tying a particular colored ribbon around their tails; and in some places each milker carries a string, on which a knot is made for every cow that is milked, to prevent any from being forgotten. The fields are large, and often at a great distance from the dairy, but the milk is safely and easily transported by means of a long, low, four-wheeled one-horse wagon, in the side-bars of which strong iron hooks are inserted at such distances that the milk-pails, containing from thirty to forty quarts each, may swing free of each other; and these, though filled nearly to the brim, are prevented spilling by merely having thin pieces of wood, about the size of a dinner-plate, floating on the surface. The milk, when brought to the dairy, is immediately strained through a hair-sieve into the vessels placed to receive it. These vessels are of various materials: they may be of wood, earthenware, copper tinned, zinc, cast-iron lined with a China-like composition, or glass.

In order to secure butter of a first-rate quality, the cream is removed from the milk before any acidity is perceptible, and it has been found that a cellar temperature of from 60° to 62° Fahrenheit is the most favorable, allowing a complete disengagement of the cream in thirty six hours; whereas a greater degree of warmth, while it quickens the separation, still more hastens the souring process, which injures both the quantity and quality of butter. In a cold temperature the separation is effected much more slowly, so that forty-eight and even sixty hours may be required; this, however, is the longest period which can be given without the risk of imparting a rank, unpleasant flavor to the butter. The first signs of acidity in milk are a very slight wrinkling of the cream, and a scarcely perceptible acid taste. The moment this is observed, the skimming commences, even if the milk have stood but twenty-four hours. The cream is poured through a hair-sieve (which is kept for the purpose and never employed in straining the new milk), into large barrels, containing about two hundred and forty quarts each, in which it remains until it is sufficiently sour, being stirred at intervals to prevent its becoming *cheesy*. The next object of the dairy-woman's skill is the degree of warmth or coolness which must be imparted in order to secure good butter.

In warm weather the churn is rinsed with the coldest water, in which a piece of pure ice is often thrown, and sometimes, though more rarely, cold spring water is added to the cream about to be churned, which operation is then always performed either very early in the morning or late in the evening. In cold weather, on the contrary, warm water is applied both to rinsing the churn, and to the cream itself.

The churning being completed, the butter is taken off by means of a large wooden ladle, and carried in a tub directly to the butter-cellar, where it is cast into a large trough, hollowed out of the trunk of an oak or beech, very smoothly polished inside, and provided with a plug-hole at the lower extremity, beneath which a small tub is placed to receive the expressed milk. There the butter is slightly worked, and salted with the purest salt, then moulded with a wooden ladle into a mass at the upper end of the trough, and left for some hours to soak and drain. In the evening it is thoroughly kneaded and beaten, or rather slapped, the dairy-maid repeatedly lifting a piece of from three to four pounds, and slapping it with force against the trough, so as to beat out all the milky particles; and thus lump after lump being freed from extraneous matter, the whole mass is spread out, receives its full proportion of salt, about an ounce and one-eighth per pound, which is worked with the utmost care equally through it, and again moulded into one compact mass. The butter in Holstein is scarcely ever washed, as water is believed to rob it of its richness and flavor and to be unfavorable to its preservation.

When a quantity is ready, sufficient to fill a cask, the several churnings are once more kneaded through, a very little fresh salt added, and the butter is packed in a barrel made of red beech-wood, water-tight, which has been prepared by careful washing and rubbing on the inside with salt. Great care is taken that no space shall be left either between the layers of butter, or the sides of the cask. In large dairies a cask is never begun to be filled until it can be completed, as thus alone the butter can be exactly of the same flavor and color throughout. The qualities of the excellent butter on which the Holsteiner prides himself, are *first*, a fine, even, yellow color, neither pale nor orange-tinted; *second*—

ly, a close waxy texture in which the extremely minute and transparent beads of brine are perceptible; but if these drops be either large or in the slightest degree tinged with milk color, it is considered as marking an imperfect working of the butter, while an entirely dry, tallowy appearance is equally disapproved; *thirdly*, a fresh fragrant perfume, and a sweet kernely taste; *fourthly*, the quality of keeping for a considerable time without acquiring an old or rancid flavor.

There are four qualities or varieties of butter known in Holstein. These are named, *Fresh-milk*, *May*, *Summer*, and *Stubble* butter, according to the season in which each is produced. The *Fresh-milk* butter is that made in the spring, between the time when the cows calve and their being turned out to pasture. The *May* butter is that produced in May, after the cows have been sent to grass. This is highly prized for its peculiarly fine aroma when fresh, but is found not to keep well, and, therefore, like the *Fresh-milk* butter, is generally sent to market as it is made. The *Summer* butter is made in June and July, and from that time till the cows are removed from pasture, the butter bears the name of *Stubble* butter. Both these latter sorts, if properly made, keep well, and retain their fine flavor nearly unimpaired until the following spring. The small quantity produced between the time of the cows being housed and becoming dry, is called *old-milk* butter, and is least of all esteemed.

In winter, when the cows are confined to dry food, and the butter loses its fine yellow color, artificial means are employed to remedy the defect; for the Holstein merchants find that without the usual degree of coloring, their butter will not in some markets (as in Spain and Portugal) fetch its accustomed price. The ingredients used for this purpose are a mixture of annatto and turmeric, in the proportion of five ounces of the latter to one pound of the former. These ingredients are boiled in butter for half an hour, stirring them frequently, and then straining through linen. The preparation can then be kept for use. When butter is to be colored, a portion of this mixture is melted over the fire: it is then poured into a hollow made in the mass of fresh churned butter, and by rapid stirring is intimately united with the butter immediately in contact with it, which being then spread over the whole mass, is, together with the requisite proportion of salt, carefully kneaded and worked through until no particle remains more highly colored than another; and when smaller portions have thus been colored from day to day, before a cask can be filled, the whole must, before packing, be kneaded once more, that no disparity of shade may disfigure it.

The greater portion of the butter made in the dairies of Holstein and Schleswig, is bought up by the Hamburgh merchants, though it is likewise sent in considerable quantities from Keil and other parts to England and Copenhagen, and the West Indies.

We have already noticed the importance attached to every particular relating to the milk-cellar, and the utensils employed in making this celebrated butter. The different materials used for milk-pans were named, and we may now give some farther notices from the same authority on this head. Various kinds of utensils have been tried in Holland, in the hope of discovering how, in hot weather—more especially when a thunderstorm is gathering—the milk can be kept from too early an acidity. Those in most general use are shallow wooden vessels, nearly of an equal diameter at top and bottom, containing, when full, eight quarts—but in which, during summer, seldom more than six quarts are poured. The chief disadvantage of these vessels is the great labor and attention required to remove all acidity, which, in some states of the atmosphere, is almost unavoidable; and which, penetrating the pores of the wood, sometimes resists all the patient scrubbing, first with hot water and small birch-scrubbers, and secondly, with boiling water, and a hard round brush made of pig's bristles, with which every part of the utensil is carefully polished over. Sometimes the dairy-maid is compelled to resort to washing in a lye of wood-ashes or boiling, or even scorching over lighted chips, followed by countless rinsings in pure spring water. To diminish this labor the milk-venders in town paint the milking-pails and dishes with a preparation of cinnabar, linseed-oil and litharge; but this is expensive, for the vessels require three coats of the composition at first, and one yearly afterward—and, after all, the milk, for some days after these vessels are brought into use, has a perceptible taste of paint. Tinned copper milk-pans are very

costly, and require constant watching, lest they should require re-tinning. The zinc pans are yet but little known, and their value not sufficiently proved. Cast-iron lined with enamel are durable and very clean, but too expensive. Glass pans have many opponents on account of their brittleness. The testimony of Mr. Carr, however, is *decidedly in favor of this material*. He says that in his dairy (which is supplied by 180 cows,) the glass vessels have been used for four years. They are sixteen inches broad at the top, and twelve at the bottom: the glass is dark bottle-green, transparent and perfectly smooth, about one-eighth of an inch thick, and furnished with a round rim at the upper edge, which makes it easy to retain a safe hold of them even when full. They would contain eight quarts, but never receive more than six. "They cost eight-pence apiece, and their durability may be estimated by the fact that, to encourage carefulness, each dairy-maid is allowed one dollar extra as pan-money, being bound at the same time to pay tenpence for each one she breaks: yet hitherto," says Mr. Carr, "no girl has broken to the extent of her dollar." The great advantage of these vessels is in the saving of time, fuel and labor they effect, for they merely require to be washed in lukewarm water, then rinsed in cold water, and put in a rack to dry. Supposing, therefore, (which Mr. Carr does not admit,) that the milk, during summer, becomes sour sooner, and consequently throws up less cream, in glass than in wood, this disadvantage would be more than counterbalanced by the diminished expenditure of glass vessels: for, of course, where time and labor are saved, the number of domestics may be lessened.

Cow-houses in Holstein are generally twice as long as broad, and calculated for four cows lengthwise, standing head to head, with passages between, floored with brick, and furnished with feeding and drinking troughs. One passage, if not both, is broad enough to admit a loaded hay-wagon, and is provided with large folding doors at each end, while there is also room behind the cattle sufficient to permit the manure being sledged out with a horse without incommoding them. The lofty roof affords accommodation for hay and straw, which helps to keep the house warm in winter; the doors are kept shut as much as possible during that season, sufficient light being admitted by small glazed windows. The quantity of food which can be afforded to cows during winter is ascertained as soon as the harvest returns are known. In plentiful seasons the calculation is that each cow should be allowed three sacks of grain, (generally oats, 140 pounds each sack,) 3,900 pounds of straw, including bedding, and 1,800 pounds of good hay; while for every hundred pounds of hay less, she receives twenty-five pounds of grain more, or *vice versa*.

There are three distinct breeds of cattle in the Duchies—the native cow, the marsh cow, and the Jutland cow. The first is middle-sized, with fine head and horns, and moderately thick neck; the color generally red or brown, though often yellow, black, or spotted. The District of Angeln produces the finest specimens of these cows, which are considered to yield more milk in proportion to the food they require than any other kind. The marsh cows are large-boned, generally red, and require luxuriant pasture. They thrive well in the marshy delta of the Elbe, giving from twenty-four to thirty-two, or even forty quarts, when in full-milk, daily; but the return of butter is much smaller, and of inferior quality to that of the Angeln cattle. The Jutland cow is fine in bone, rather lengthy than deep in body, but not generally long-legged. The usual colors are gray, dun, or black, or either of these spotted with white. They are distinguished for fattening easily, and are not much prized for dairy purposes.

The average quantity of milk obtained from good stock is estimated at from 2,000 to 3,000 quarts per annum, according to the food and care bestowed on the cows. The produce has been calculated thus: every 100 pounds of milk will give $3\frac{1}{4}$ pounds of butter, 6 pounds of fresh cheese, 14 pounds of buttermilk, (exclusive of the water added before and after churning,) and 76 pounds of whey; and though the different circumstances affecting the cows cause a great variety in the results, still it is considered a fair average that fifteen quarts of milk are required for a pound of butter; for although from some cows a pound may be obtained from twelve quarts, yet others, and even the same cows at different seasons, and with different food, (such as beet, or raw potatoes,) will not produce a pound of butter from less than seventeen or eighteen quarts. On the whole, it is esteemed a fair return, in these Duchies, when the average produce of the dairy amounts to 100 pounds of butter, and 150 pounds of cheese, per cow.

The Plough, the Loom, and the Anvil.

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HEAR BOTH SIDES.

WE yesterday read an article in a morning paper, impliedly eulogistic of a high tariff and condemnatory of free trade, as the writer is pleased to style the present revenue policy of the government; a policy, by the way, which yields the government some fifty millions of dollars annually, and which steadily favors the increase of domestic produce, the exports of the last month being over \$800,000 more than for the corresponding month of last year. Still, the high protectionists will insist that the country is laboring under all the evils of free trade, and that the evidences of wonderful prosperity that every where all over the country show themselves, are so many signs of bankruptcy and ruin, only deferred to the present by the intervention of the "Irish famine." Why all these misrepresentations? We have no free trade, nor is the country otherwise than prosperous. It is true there are some manufacturers who are making less than they desire, and they would have the law compel those engaged in other pursuits—the farmer, mechanic and laborer, at whatever occupation—pay to them such profits as would insure fortunes in a few years. There are some manufactories too, perhaps, worn out, or having in use machinery that cannot compete with others enjoying the most modern improvements, that may lose on their work. But that is no government affair, nor is it any proof that the same description of goods cannot be profitably produced in this country. Indeed, such goods are produced daily, and new preparations for their creation are daily making in almost every section of the Union. So much for the facts—now, a word for the sneer at free trade. I have corn and I want pork. My neighbor has pork and wants corn. We exchange; that is free trade. That is the thing which the protectionists sneer at and ridicule. They say to the farmer, Your free trade is a very bad thing for you; do you just pay the government a third of the price of the pork you get from your neighbor, and let him pay the third of the price of the corn he gets of you, and it will be much better for both of you. That is a tariff of protection. Which is best for farmers and all other laborers who have this description of tax to pay? The shoemaker makes shoes for his neighbors and takes their grain, meat and potatoes in payment. This is free trade. Would it be better for him and his customers to make him pay the government the value of one third of all he gets in exchange for his labor? That is the tariff policy. So it is with all other classes of society. Free trade permits every body to sell what they have for the best price they can get, and to buy what they want as cheap as they can. A farmer drives his wagon to market, gets the best price he can for his load, buys what he wants, and is on his return home. It is free trade thus far; but at the boundary of his county or his town, there is a little toll-house, the keeper of which makes him pay to the government a sum of money equal to one third of the value of all he has in his wagon. Is this better than free trade? Better than carrying home the money he has left? Would it be a good thing to have these toll-houses at the lines of all our towns, counties and cities to take a third of all that comes in, or its value in money, from the farmers, mechanics and other laborers, who are always carrying the products of their industry to and fro for a market? Would it be better than free trade? Our Constitution establishes free trade between the States. Would it be better for our farmers and others if toll-houses or custom-houses were erected on every road, river and canal, where it crossed a State line, to take from every passing cart, wagon or boat, for the use of the government, one third of all the produce and goods transported in them or their value in money? Would it have been wiser in the framers of the Constitution to have given us such a system, instead of the free trade that they established? Few there are who will maintain that it would be a good thing for farmers to be taxed on the road to their neighbors, or at the town, with the products of their farms or the goods or other produce they have purchased by their sale. What difference does it make whether the farmers and mechanics who exchange products live

on opposite sides of a stone fence or of the Atlantic ocean? What difference does it make whether the articles coming in exchange for the farmers' products are taxed at the gate as they enter his yard, or at the Philadelphia custom-house, where they enter his country? Is it not the same to him? Is it better for him that they should be taxed at either than that they should not be taxed at all? Is it better that the tariff should deliver them, taking from the farmer one third of their value at the same time, or that free trade should deliver them without taking from him any thing? So much for our neighbor's sneer at free trade.—*Public Ledger*.

From the day on which we commenced the publication of this journal, we have made it an invariable rule to practise perfect free trade in reference to ideas, permitting our opponents to lay their views before our readers, and we have never in a single case replied to any of the many attacks that have been made upon us without also giving the attack itself. We have desired that our readers should form an intelligent judgment in reference to that greatest of all questions for the Union, THE IMPORTANCE OF MAKING A MARKET ON THE LAND FOR ALL THE PRODUCTS OF THE LAND, thereby enabling the farmer to return to it the manure yielded by its crops, maintaining, and even increasing its power of production, *thus increasing the value of the land*—and at the same time enabling him to find employment for the spare labor of himself, his sons, his wagon and his horses, when not required upon the farm, and for that of his daughters, unfit for out-door employment, *thus increasing the value of labor*. In accordance with this our usual mode of proceeding, we now lay before them the above argument from the Philadelphia *Public Ledger*, in favor of the system known in the British books by the name of free trade, the object of which is the perpetuation of the British monopoly of machinery for the production of cloth and of iron and the maintenance of the power of Britain to compel all the farmers and planters of the world to make their exchanges in her single market, that she may there fix the prices of all she requires to buy, and of all she desires to sell. It is the argument, too, of that portion of the community which sees advantage to the farmer from the exhaustion of his soil in raising commodities for foreign markets, and injury to him from every effort tending to bring the market to his door, and place the consumer by the side of the producer; and will, therefore, as we trust, be studied by all our readers, to whose careful perusal we strongly recommend it.

In thus circulating the arguments of our opponents, our object is, and has been, that of finding among them some one possessing either the courage to defend his doctrines, or the honesty to admit that they were indefensible, but thus far we have failed to find even a single one possessed of either of these qualities. We have invited them to publish our views, weak and fallacious as they hold them to be—and have offered in return to lay their powerful arguments before our readers; yet advantageous as would appear to be such an arrangement, not one as yet has ventured to accept it. They stigmatize the arguments of their opponents as "fallacious," yet fear to circulate them! They profess to regard their own arguments as being unanswerably true, yet will they not accept our offer to circulate them among the advocates of protection! They shout "Free trade! Free trade!" and would have the world believe that they alone are the opponents of restrictions upon the freedom of exchange, well knowing at the moment that we advocate protection as *the true and only possible mode by which freedom of trade can be reached*. In all this there is, as it appears to us, strong evidence that the opponents of protection doubt the truth of their own doctrines. Were it otherwise, would they not gladly re-publish our arguments with a view to show their weakness, and would they not as gladly avail themselves of our offer to exhibit to our readers the

strength of their own? We reprint theirs, and will reprint those of any journal of equal standing with our own that will do as much by ours, and thus do we prove our perfect conviction of the truth of what we have to say; but of all the journals professing "free trade," not one, we fear, will be found to follow our example in permitting their readers to see both sides of this great question, and thus enabling them to form a judgment for themselves.

Of all the journals that meet our eyes, we know of no one more persevering than is that from which we take this extract, in its efforts to prevent the adoption of measures tending to enable the farmer to bring the market to his door, and thus to enable him to find employment for himself, his sons and his daughters, while enriching his land with the refuse of its crops—none more pertinacious in its efforts to prevent the adoption of any measures tending to protect the American laborer in his competition with the half-starved, ill-clothed, and down-trodden laborers of Europe—none more ready to seize upon any stray fact to be used as a set-off against the thousands of facts that are brought forward in support of the doctrine, that if the farmer and planter would prosper, they can do so only by acting in accordance with the doctrine of Adam Smith, who taught that the true place for the artisan was to be found in the midst of the producers of the raw materials that were to be converted, and of the food that he was to eat while converting these raw materials into the forms fitting them for transportation to distant markets. It is for that reason that we now re-publish its views, and we do so in the hope that it will, *for once*, enable its readers to see both sides of the question, as we certainly shall do in relation to any rejoinder it may see fit to make to what we have now to say. We scorn to deceive our readers. They, at least, shall have laid before them the arguments of the opponents as well as of the friends of the protective policy, and if they act with us, it shall be upon full conviction.

As usual, this free-trader begins with the public revenue. The tariff of 1846 yields much revenue, and therefore it must be retained. In 1832, protection was found to yield too much revenue, and therefore it was to be annihilated. Such is the consistency of free-traders! The argument of to-day differs always from that of yesterday, yet do they reproach their opponents with teaching "fallacies!" The free-trader of '46 contended that the power of the people to consume was diminished by protection. The free-trader of to-day is content that *Government* has much to waste, and it is indifferent to him whether the means of the people increase or decrease under the present system. To prove to him now that the people consume less cloth and far less iron than they did four years since, notwithstanding the vast growth of population, is a waste of words. He points triumphantly to the revenue, and so did he do in 1836, when the nation had just arrived at the brink of the precipice, as soon was proved. He is opposed to any interference of Government for the protection of the farmer in his efforts to draw to his side the spindle and the loom, the hammer and the anvil; yet does he rejoice that the Government can collect a large amount of taxes to be employed in supporting steamships in their competition with the cheap labor and cheap capital of Europe, and fleets of Government vessels in looking after the ships and ministers resident and ministers plenipotentiary, in scrutinizing the operations of other countries in the hope to find more employment for ships—and thus is he ever the advocate of governmental interference in one direction while denouncing it in another, compounding

——— "for sins he has no mind to,
By damning those he's not inclined to."

The piston that drives the steamship must be protected, but it is held to be contrary to sound policy to protect the one which drives the cotton mill.

What, however, are the facts in regard to this revenue? Does not this writer know well that since the passage of the bill of '46 we have contracted a foreign debt of at least a hundred millions, making, with that contracted under the compromise, not less than three hundred millions? Does he not know that the amount of interest now payable abroad requires almost eighteen millions of dollars per annum? Does he not know that each and every day increases the amount of bonds and stocks held in Europe, and in a corresponding degree the sum required to discharge the interest? Does he not know that we had in 1836 an equal amount of revenue, and that the laudation of free trade was then the same as now? It gave us surplus revenue, and doing so, it was then, as now, held to be perfectly clear that protection was "a fallacy," and yet does he not know that in a few short years the Government was on its knees to the brokers and shavers of Europe, soliciting a loan, and meeting every where with repulse? Does he not know that such is the inevitable tendency of things at the present moment? Does he not see that enormous importations and large revenues must inevitably be followed, as were those of 1836, by small importations and small revenues, when the Government will again be in the market as a borrower? Does he not know that it was the protective tariff of 1828, and the large and *constantly growing* revenue which it gave, that *annihilated the public debt in 1834*? Does he not know that it was the *constantly diminishing* revenue under the compromise that built up the debt which existed in 1842? Does he not know that the rapid growth of revenue under the tariff of 1842 enabled us at once to cease borrowing and commence the payment of the debt? Does he not know, and see, and feel, that the present revenue is due to a credit that, *destroyed by the compromise*, was reconstructed under the tariff of '42, and that tends now to disappear with every increase of debt, precisely as would be the case with an individual? If he does not know these things, we would recommend him to study anew the facts in relation to the public revenue and the public debt, before he shall again undertake to write of either.

The tendency of REVENUE under protection has invariably been upwards and permanently so, whereas under the system commonly called free trade—*lucus a non lucendo*—it has invariably been downward, except so long as credit has enabled us to contract loans—or rather to buy goods without paying for them.

The tendency of CREDIT has invariably been upward under protection, and as invariably has it disappeared after the withdrawal of protection, because with its withdrawal there has been invariably a *diminished power to pay* for foreign merchandise, and an *increased necessity for running in debt*, the consequence of which to a nation is precisely the same as to an individual.

The tendency of PUBLIC EXPENDITURE has invariably been upward under the system called free trade, and as invariably downward under protection. The one system looks to increasing the power of Government, while the other looks to its diminution.

The tendency of THE PUBLIC DEBT has invariably been downward under protection, because large home production gave great power to purchase foreign commodities, and to contribute to the support of Government. We had much to sell and could *pay for* much produced elsewhere. It has as invariably been upward under the withdrawal of protection, because small home production was accompanied by diminished power to pay for foreign commodities, and the revenue fell off as soon as we had exhausted our credit.

We are here told of the increase of domestic produce exported, but our political economist carefully avoids to inform us whether this increase is of a character to be profitable to the farmer who produces the commodities exported. The *value* of exports has in some cases increased, because of short crops—*producing temporarily the same effect on foreign prices that would have been produced permanently by increased home consumption*, had our free-traders permitted it to increase. We have raised little cotton, and therefore the price has been high; but so soon as it came to be ascertained that the crop of the present season would reach 2,300,000 bales, it fell to little more than the price of 1846, *the last of four large crops*, by which the markets of Europe had been glutted. The average crop of the years 1843 to 1846 was about 2,200,000 bales, and the average price of the last of those years was 7.3 cents per pound, while the price of middling—which is the average of the crop—is now in Mobile and New-Orleans but $7\frac{1}{2}$ to 8 cents, although this is *the last of three small crops*. Should present prospects be realized, the next crop will reach, if not exceed, three millions of bales; and what then will be the price? Our free-trader will then boast of the *quantity* exported, and not of the *value*. The tariff of 1846 has effectually prevented the building of mills throughout the northern portion of the Union, and the addition at the South is too small to have any effect upon such a crop; whereas had the tariff of 1842 been permitted to remain, we should now have machinery for the conversion of more than a million of bales into cloth, and the quantity to go to Europe would be much less out of a three million crop than it was in 1845 out of one of 2,400,000 bales. Our sagacious political economist would inquire what we should do with all this cloth? In answer, we tell him that we should be now mining six millions of coal for the supply of furnaces, factories, and steamships, and the prosperous workers in those mines, furnaces and factories. Prosperous miners would need food, and coal, and iron, and cloth; and prosperous farmers would need cloth, and iron, and fuel; and prosperous furnace-men would need fuel, and cloth, and food; and prosperous operatives would have abundant cloth to give in exchange for food and fuel and iron; and thus would all be benefited, while the planter would be receiving higher prices for a large crop than he has been accustomed to receive for a small one, and consuming thrice as much of the products of the North as he will now do when next his crop is large.

The columns of the *Ledger* abound with suggestions of over-production of various commodities, but it is time that gentlemen who undertake to teach political economy should understand that *every man is a consumer to the whole extent of his production*, and that what he calls “over-production” is but a consequence of under-production of other articles to be offered in exchange for them. If he doubt this, we would recommend him to study the work of Mons. J. B. Say,* who is, we doubt not, high authority with him, and there he will find that “*a product is no sooner created than it, from that instant, affords a market for other products to the full extent of its value.*” Looking further in the same work, he will find that “it is because the production of some commodities has declined, that others have become superabundant.” Again, he will be told,

That in every community, the more numerous are the producers, and the more various their productions, the more prompt, numerous and extensive are the markets for those productions; and by a natural consequence, the more profitable are they to the producers, for price rises with the demand.

* Book I. chap. XIV.

What, now, is the policy advocated by our contemporary? Is it not that which tends to convert the miners and furnace-men and the mill operatives into farmers, and thus to diminish the variety of their productions, and to render less prompt, less numerous, and less extensive the market for their products? Does he not know that the man who eats the food while mining the coal or ore, and he who converts the food and fuel and ore into iron, are compressing into a small space a vast bulk of food and other raw produce of the earth, so as to fit it for transportation to distant markets? Does he not know that England is the largest exporter of food in the world? If he does not, we would recommend him to read a letter on that subject by the free-trade member of Parliament, Mr. Brown, and afterwards to study carefully the following extract from a high free-trade authority, Adam Smith, who perfectly appreciated the importance of making a market on the land for all the products of the land:—

An inland country, naturally fertile and easily cultivated, produces a great surplus of provisions beyond what is necessary for maintaining the cultivators; and on account of the expense of land carriage, and inconvenience of river navigation, it may frequently be difficult to send this surplus abroad. Abundance, therefore, renders provisions cheap, and encourages a great number of workmen to settle in the neighborhood, who find that *their industry can there procure them more of the necessities and conveniences of life than in other places. They work up the materials of manufacture which the land produces, and exchange their finished work, or, what is the same thing, the price of it, for more materials and provisions.* They give a new value to the surplus part of the rude produce, by saving the expense of carrying it to the water-side, or to some distant market; and they furnish the cultivators with something in exchange for it, that is either useful or agreeable to them, upon easier terms than they could have obtained it before. The cultivators get a better price for their surplus produce, and can purchase cheaper other conveniences which they have occasion for. *They are thus both encouraged and enabled to increase their surplus produce by a further improvement and better cultivation of the land; and as the fertility of the land has given birth to the manufacture, so the progress of the manufacture re-acts upon the land, and increases still further its fertility.* The manufacturers first supply the neighborhood, and afterwards, as their work improves and refines, more distant markets. For though neither the rude produce, nor even the coarse manufacture, could, without the greatest difficulty, support the expense of a considerable land carriage, the refined and improved manufacture easily may. *In a small bulk it frequently contains the price of a great quantity of the raw produce. A piece of fine cloth, for example, which weighs only eighty pounds, contains in it the price, not only of eighty pounds of wool, but sometimes of several thousand weight of corn, the maintenance of the different working people, and of their immediate employers.* The corn which could with difficulty have been carried abroad in its own shape, is in this manner virtually exported in that of the complete manufacture, and may easily be sent to the remotest corners of the world. In this manner have grown up naturally, and as it were of their own accord, the manufactures of Leeds, Halifax, Sheffield, Birmingham and Wolverhampton. Such manufactures are the offspring of agriculture.

These views are in perfect accordance with the facts. The laborer rejoices when the market for his labor is brought to his door by the erection of a mill or a furnace, or the construction of a road. The farmer rejoices in the opening of a market for labor at his door, giving him a market for his food. His land rejoices in the home consumption of the products it has yielded, for its owner is thereby enabled to return to it the refuse of its product in the form of manure. The planter rejoices in the erection of a mill in his neighborhood, giving him a market for his cotton and his food. The parent rejoices when a market for their labor enables his sons and his daughters to supply themselves with food and clothing. Every one rejoices in the growth of a home market for labor and its products, for trade is then increasing daily and rapidly; and every one mourns the diminution of the home market, for it is one the deficiency in which cannot be supplied. Labor and commodities are wasted, and

the power of consumption diminishes with the diminution of the power of production, trade becomes languid, labor and land diminish in value, and laborer and capitalist become daily poorer.

The opponents of protection deny the truth of this. They say that we are an agricultural nation, and must so continue, and that we must have a surplus of food and cotton, and that it is quite idle to suppose that a market could be made at home for the hundreds of millions of bushels of food for which, as is alleged, we need a market. Our exportation of food is, however, a mere trifle, while that of England is immense, because England adopts the idea of Adam Smith in combining the food and the wool, and sending to distant markets *thousands* of pounds weight of corn combined with *tens* or *hundreds* of pounds of cotton, in the form of a piece of cloth. The object of the advocates of protection is that of the extension of the power to maintain trade with distant nations, by bringing about the establishment of machinery at which the wool and the food may be combined with each other, and so reduced in bulk as to fit them for transportation; and that protection does produce that result is obvious from the fact that we now export largely of manufactures of which but recently we were large importers—that the German Customs Union, or *Zoll Verein*, now exports largely of various commodities for which, until protection was established, Germany was wholly dependent upon foreigners—and that the whole competition with England for the trade of the world is with those countries that have established protection—to wit: France, Belgium, Germany, and the United States. The object of the system called in Britain free trade, and advocated by the *Ledger*, is that of *compelling* our farmers and planters to continue to export their products in the most bulky form, thereby exhausting both the land and themselves—for the farmer who sells off the produce of his land to be consumed at a distance, is selling the soil which constitutes his capital. The nation that exports raw produce has a limited market and pays heavy transportation, and remains poor; whereas the nation that finishes the work of production by converting its wool and its cotton into cloth, and its food into iron, and thence into machinery of iron, has before it the trade of the world, and the cost of transportation is trivial—and as the cost of going to market falls always on the producer, it is obvious that as that cost is diminished the farmer and planter must grow rich.

Why is it that the people of this country export raw produce? Why should they be guilty of the folly described in the following passage, which we copy from an article by the *free-trade* editor of the *Democratic Review*?—

What a strange absurdity it is to see silk going from China and France, cotton from the Southern United States, wool from Australia, coffee and sugar from Brazil, wheat from New-York, Michigan, Odessa, and Poland, hemp and flax from St. Petersburg, pork and lard from Ohio and Illinois, concentrating in Lancashire, to be returned in goods to the localities from whence they came!

It is a strange absurdity. The Tennessee planter sends his corn and his cotton to New-Orleans, that both may cross the ocean together, the corn to be eaten by the child that spins the wool and the woman who weaves it, and he pays for transporting and exchanging the food and the wool *five times as much as it would have cost him to have the wool spun and woven at home*—the consequence of which is, that instead of obtaining one bale of cloth for two bales of cotton, he has but one bale for five—and instead of obtaining two pounds of cloth for a bushel of grain, he has less than half a one—and this is the mode, according to our *free-traders*, in which he is to grow rich.

Were this all, it might be borne; but it is very far from all. Throughout

the country, the land, constantly cropped for the supply of distant markets, is impoverished, *and thus is the farmer constantly wasting his capital.* The effect of this is so well described by Professor Johnston, an eminent agriculturist who recently travelled through this country, that we are induced to lay his views before our readers :—

I will briefly refer to some points which came under my observation in that part of the country which I visited. First of all, as to the state of agriculture in the northern parts of America, in our own provinces and in New-England, with which we are ourselves more familiar, when I tell you generally that the state of agriculture in those parts of America is what the state of agriculture in Scotland probably was eighty or ninety years ago; and when I tell you that in some parts of New-Brunswick they are very nearly in the precise condition in which Scotland was one hundred and twenty years ago, you will have an idea of the state of agriculture in North America. The system of agriculture is no farther forward—it is exceedingly far behind.

Now what has been their procedure—by what kind of procedure have they brought about the *state of exhaustion to which the soil has been reduced?* Of course, in speaking of the exhausted soil, I do not refer to the virgin soil which has never received the plough or the spade, but to the soil under their cultivation, and *which they are now exhausting.* When I tell you how the land is cultivated, you will understand how this exhaustion has been produced. The forest is in the first place cut down and burnt, after which the ashes are scattered, and a crop of wheat and oats is sown. When this crop is cut down another is sown; but they do not always remove the straw—they do not trouble themselves with any manure. The second year they sow it again and harrow it, and generally take three crops in succession. When they can take no more out of it, they either sow grass seeds, or as frequently let it seed itself. They will then sometimes cut hay for 12, 14, 16, 18, or 20 years in succession; in fact, as long as they can even get half a ton-an-acre from it. And you may suppose what is the natural fertility of the land, when they are able to obtain as much as three or four tons per acre at first, and go on cutting it for twelve years. They will probably have two tons an acre during all that length of time. The land is then broken up, and the crop of oats taken, then potatoes, then a crop of wheat, and then hay for twelve years again, and so the same course is repeated. Now this is the way in which the land is treated—*this is the way in which the exhaustion is brought about.* This exhaustion exists in Nova Scotia, New-Brunswick, Lower Canada, in Upper Canada to a considerable extent, over the whole of New-England, and extends even into the State of New-York.

Now, the condition of things in the Western States, in reference to England, is precisely the same as the condition of England in reference to the wheat-producing countries of the Baltic. The condition of the farmers is exceedingly bad, and in Maine I was informed that they were all in a state of bankruptcy. The land is all mortgaged, which hangs like a mill-stone round their necks, and is worse even than the state of farmers in this country. They are thus unable to compete with the western parts of New-York or Lake Ontario. You have all heard of the famous wheat of Genesee, where the land is more fertile than in any part of Great Britain; and I learned there that they are laying the land down to grass, *because they cannot afford to grow wheat.*

In New-Brunswick, New-England, Vermont, New-Hampshire, Connecticut and New-York, the growth of wheat has almost ceased, and it is now *gradually receding farther and farther westward.* Now, when I tell you this, you will see what I believe to be the case is really the case—that it will not be very long before America will be unable—in fact the United States are unable now—to supply us with wheat in any large quantity. If we could bring Indian corn into general use, we might get plenty of it; but I do not think that the United States need be any bugbear to you. I believe the great source of competition you will have to contend with is the Baltic, and the countries on the borders of the Black Sea.

Why is it that the farmers and planters of the country pursue a policy so adverse to their interests? Why should they desire to exhaust the land and thus diminish its power of production, while increasing the cost of transporting to market the small quantity they do produce, and thus destroying the value of both land and labor? The answer is that they do not desire it, but that they are subjected to a policy having for its object that of compelling them to make all their exchanges in distant markets, and to pay hosts of mid-

dlemen for doing that which they could better do themselves, while wasting on the road and in those distant markets the manure that should be returned on the land; the consequence of which is, that they are always increasing their distance from market, because of the necessity for abandoning worn-out lands, the owner of which has wasted his capital in obedience to the laws of what is called free trade. What man of all these but is fully aware of the advantage that would result from bringing consumers of food to take their place by the side of producers of food? Not one of them hesitates even for a moment to believe in the views taught by Adam Smith, *when laboring for the abolition of the British monopoly system*, having for its object to make of Great Britain "the workshop of the world" as here given:

"Without the assistance of some artificers, indeed," says Dr. Smith, "the cultivation of land cannot be carried on, but with great inconveniency and continual interruption. Smiths, carpenters, wheelwrights and ploughwrights, masons and bricklayers, tanners, shoemakers, and tailors, are people whose service the farmer has frequent occasion for. Such artificers, too, stand occasionally in need of the assistance of one another; and as their residence is not, like that of the farmer, necessarily tied down to a precise spot, they naturally settle in the neighborhood of one another, and thus form a small town or village. The butcher, the brewer, and the baker soon join them, together with many other artificers and retailers, necessary or useful for supplying their occasional wants, and who contribute still farther to augment the town. The inhabitants of the town, and those of the country, are mutually the servants of one another. The town is a continual fair or market, to which the inhabitants of the country resort, in order to exchange their rude for manufactured produce. It is the commerce which supplies the inhabitants of the town, both with the materials of their work, and the means of their subsistence. The quantity of the finished work which they sell to the inhabitants of the country, necessarily regulates the quantity of the materials and provisions which they buy. Neither their employment nor subsistence, therefore, can augment, but in proportion to the augmentation of the demand from the country for finished work; and this demand can augment only in proportion to the extension of improvement and cultivation. *Had human institutions, therefore, never disturbed the natural course of things, the progressive wealth and increase of the towns would, in every political society, be consequential, and in proportion to, the improvement and cultivation of the territory or country.*"

The whole object of the British system is, and has at all times been, to produce directly the reverse effect. Every species of manufacture was forbidden in America, and as far as possible "discountenanced" in Ireland, that both might be *compelled* to employ English ships, English merchants, English looms, and English workmen, and thus contribute largely to the system of ships, colonies, and commerce, by aid of which Britain aimed to rule the world. The extreme injustice of this system was obvious to Dr. Smith, who said of it that

To prohibit a great people, however, from making all they can of every part of their own produce, or from employing their stock and industry in a way that they judge most advantageous to themselves, *is a manifest violation of the most sacred rights of mankind.*

The impolicy of the system, as regarded the interests of Britain herself, was shown to be as great as the injustice to her colonists, because tending to drive British capital from the profitable home trade to the comparatively unprofitable foreign one.

"The most advantageous employment of any capital to the country to which it belongs," says Dr. Smith, "is that which maintains there the greatest quantity of productive labor, and increases the most the annual produce of the land and labor of that country. But the quantity of productive labor which any capital employed in the foreign trade of consumption can maintain, *is exactly in proportion to the frequency of its returns.* A capital of a thousand pounds for example, employed in a foreign trade of consumption, of which the returns are made regularly once in the year, can keep in constant employment, in the country to which it belongs, a quantity of productive labor, equal to what a thousand

pounds can maintain there for a year. If the returns are made twice or thrice in the year, it can keep in constant employment a quantity of productive labor, equal to what two or three thousand pounds can maintain there for a year. A foreign trade of consumption carried on with a neighboring is, upon that account, in general, more advantageous than one carried on with a distant country; and, for the same reason, a direct foreign trade of consumption is in general more advantageous than a round-about one."

The nearer the place of exchange, the greater is the advantage of the parties by whom the exchanges are made. The farmer and the miller who exchange directly with each other, divide between themselves the whole product of the wheat, but if they employ a middleman they must give him a portion of the product for doing that which they might better have done themselves. Adam Smith saw that as the market was made on the land for its products, the farmer was enriched, and his power of purchasing the produce of distant lands was increased, and he saw clearly that his countrymen were injuring themselves as well as "violating the most sacred rights of mankind," in pursuing the system which looked to converting Great Britain into that which it has since become, one vast workshop.

Instead of following his advice and establishing free trade *in the sense in which he desired it*, that is, with a view to permit the artisan every where to take his place by the side of the food and the raw materials of manufacture, she sought free trade *with directly opposite views*—those of preventing the consumer from any where taking his place by the side of the producer, and *compelling all nations, in the name of free trade, to make all their exchanges in England*. With that view, she passed repeated laws prohibiting the export of artisans, colliers, and machinery of all kinds, and when at length machinery and artisans were smuggled out of the kingdom to such an extent as to enable foreign nations to compete with her, and the maintenance of those prohibitions became useless, she deliberately resolved to sacrifice her agriculturists to her manufacturers, in the vain hope of thereby inducing foreign nations to abandon the policy of Adam Smith, which taught the advantage of bringing the consumer and the producer into close connection with each other, and to adopt that of Mr. McCulloch, which teaches the advantage to be derived from an increase in the number of middlemen, to be maintained at the cost of the man who produces the food and that other who requires to consume it.

Her whole effort is to secure to herself a monopoly of the machinery for converting cotton and wool into cloth, and food and clothing and fuel and ore into iron; and the result of that effort is and long has been a steady deterioration of the condition of her own people, and the ruin of the people of her colonies. Ireland and India, the West Indies and Portugal—the latter long a mere colony—have all in succession been ruined, as this country would have been but for protection against the system so strongly denounced by Adam Smith. Canada is unprotected, and land may be bought on one side of the line for one fifth of what it will readily command on the other. Why is this? The man on the south of the line has a market for his products which the other has not. Canada has free trade, yet she desires annexation. Why? *Because it will increase the value of both labor and land to be brought under a protective tariff*. It is really time that gentlemen who are accustomed to the publication of such platitudes as that we now copy from the *Ledger* should undertake to explain a few of the facts presented to them for consideration by the advocates of protection. Let them, if they can, explain the cause of the ruin of Ireland by any other process than that of the waste of labor and manure, consequent upon the separation of the producer and the consumer. Let them explain the cause of the present condition of Portugal, the West Indies and India. All these countries have had the *advantage* of free-trade with England,

yet all are in a state of ruin ; and such is the condition of India, with her ruined cotton manufactures, that the Government is now enabled to exist only by aid of the power which it possesses *to enforce the smuggling trade in opium*—the most infamous trade—the slave-trade not excepted—in which a nation was ever concerned. Let them explain to us why it is that *free-trade* India should be so reduced as to be compelled to depend for its revenue upon the power to produce demoralization among its neighbors. Let them explain why it is that land in the States immediately adjoining the boundary line is worth five times as much as it is in Canada. Let them explain why nearly the whole emigration from Europe is directed to the United States, when free-trade Canada is open to it, with land at one fifth of the price. Let them explain why it is that Canada, with the *advantage* of free trade with “the great grain market of the world,” seeks absorption into the Union. Let them explain the universal poverty of this country in the years prior to the passage of the tariff of 1828. Let them explain, if they can, the wonderful growth of trade and of revenue under the highly protective tariff of 1828. Let them explain the almost annihilation of trade and of public revenue under the free-trade clauses of the compromise. Let them explain the wonderful resuscitation of trade, of credit, and of public and private revenue under the tariff of 1842. Let them explain why it was that the consumption of iron doubled under the tariff of 1842, and why it has since gone back in absolute quantity, notwithstanding the vast growth of population in the period that has elapsed since the passage of the tariff of 1846. Let them also explain why the consumption of cotton, which doubled in the five years following the passage of the tariff of 1842, is now less by one hundred and fifty thousand bales than it was four years since.

The writer of this article describes free trade, and then informs his readers that this is what “protectionists sneer at and ridicule.” We are bound of course to believe that he supposes that to be the case, as we cannot suppose that he would thus deliberately state what he knew to be untrue, and therefore it is that we ascribe this statement, and indeed the whole paper, to the want of knowledge so universal among the advocates of the maintenance of the British monopoly system. Few things are more remarkable than the almost universal deficiency of knowledge of the disciples of the Ricardo-Malthusian system of political economy—that system which teaches that one nation should raise cotton and another should convert it into clothing—and that deficiency extends not only to the facts of the case, but to the views of their opponents. The protectionists of this country do nothing of the kind that is here attributed to them. They are more thorough free-traders than is the writer of this article. They do not believe in incidental protection and revenue duties of 30 per cent. called free trade. They believe in the abolition of custom-houses and the establishment of *perfect freedom of trade*, and it is because they *know* that protection is the *true and only road to perfect freedom of trade*, that they advocate the establishment of such a system of protection as shall at the earliest possible moment enable us to establish freedom of exchange with all the world. The views of the advocates of the system which looks to freeing ourselves and the world at large from the tyranny of the British monopoly system are so well explained in the closing portion of an article given in the last number of the *Merchants' Magazine*, that we are tempted to lay it before our readers, in the hope that the offer therein made may be accepted by our contemporary of the *Ledger* :—

With every association leading me to favor it, and after serious endeavors, and no little study, for years, I could not convince myself of the soundness of the protective policy, and did not, till the “Past, Present, and Future” reconciled that policy to the logic

of free trade. In common with Mr. Carey, I hold to that logic still. We are opposed to indirect taxation,—we think that duties on imports are indefensible as a mode of raising revenue from our own citizens, and that unless they can be justified on the ground of protection, not as the incidental result, but as the primary object, they cannot be justified at all. We do not ask that domestic labor in one or more departments of industry should be fostered by the Government at the expense of others. We concede that all men should be permitted to buy in the cheapest market, and sell in the dearest. We put no stress on the common notion of the balance of trade, that the country may be impoverished by the draw of its specie in payment for imports. In short, we have the same ends in view as the friends of free trade—and adopt no line of argument which is not warranted by its most distinguished advocates. We are ready to admit ourselves beaten unless we can show that *perfect protection is the shortest road to perfect freedom of trade*; and that the interest, not of producers, but of the *consumers* of protected fabrics, is subserved by following it. Upon these terms we are ready to discuss the question whenever the opportunity may be presented, asking only that both sides may be freely heard through the same medium. To many of the friends of protective policy, I am aware, it will seem that we are abandoning tenable ground, while to its opponents the challenge will appear mere bravado. To both of these classes, I only can say that if they will study Carey for themselves, they will be convinced that the offer is made in good faith, and that it is too late for any man to venture upon the discussion, on either side, who is not acquainted with Mr. Carey's "Past, Present, and Future." Meantime the offer stands. Where is the editor of a journal or periodical, opposed to the protective policy, who will lay before his readers Mr. Carey's argument in its favor, on the condition that the answer thereto shall be presented, column for column, and page for page, in a journal or periodical of equal standing and circulation on the other side?

Since writing the above, we have found in the same paper (the *Ledger*) the following article, that we lay before our readers as a specimen of free-trade reasoning:—

The United States have sent to England, for the present year, down to the 17th June, the following quantities as compared with the same period last year:—

				Bbls.			Wheat bu.
1850,	-	-	-	307,015	-	-	430,329
1851,	-	-	-	1,018,869	-	-	944,830

The excess of export is equal to 730,000 bbls., worth nearly three millions of dollars. So much for free trade. What would our farmers do with this large surplus, and what would be the price of flour and wheat, should we return again to a high tariff, and so cut them off from the market of the world?

The domestic consumption of wheat and of flour has fallen with the closing of the mills and furnaces of the Union, and the miners and furnace-men, and the builders of furnaces and mills, and the workers in cotton and wool, are every where being compelled to become competitors with the farmer in the production of food, instead of being his customers for the consumption of his food. The necessary consequence of this is, that the price of wheat and of flour has fallen to the point at which it can go abroad, and the learned Theban who indites these free-trade articles sees great advantage to the farmer from such a state of things. He inquires what would our farmers do without this great market of the world, knowing that the price of a barrel of flour in Liverpool, freight and duties and commissions paid, is but about four dollars and a half, and knowing that by the protective tariff of 1842 the production of iron grew in amount six hundred thousand tons, worth, in the various forms in which it was consumed, *sixty millions of dollars*, all paid to the farmer for food for the men who mined the coal and the ore, and food for the men who built the furnaces and the rolling mills and the shops and the houses for the workmen, and food for the people who

made the clothing, and for the raw materials of every kind required by the people who performed all the various processes in the production and manufacture of this iron which owed its existence to the tariff of 1842. The policy he advocates has closed the furnaces and the mills, and *compelled* the farmer to seek a foreign market, and he finds in the miserable market here described compensation for the destruction of a great market that was growing at the rate of *more than twenty millions of dollars a year*, among the people who produce fuel and cloth and iron to give in exchange for food. He desires to know what the farmer would do under a protective tariff, and we will tell him. They would raise more food with fewer hands. They would put back on the land the refuse of that food, and they would enrich the land instead of exhausting it. They would see tens of thousands, or even hundreds of thousands of people remaining in the East to be consumers of food, instead of going West to be producers of it. They would see the coal trade increase in two years to six millions of tons, and affording a market for twenty millions of dollars worth of food and other of the raw products of the earth. They would see the iron trade increase in four years to a million and a half of tons, affording to the farmer and planter a market amounting to a hundred millions of dollars. They would see the cotton manufacture in three years absorbing a million of bales of cotton, affording to the planter an immense market for his great staple, and enabling him to obtain in the market of Europe *double price* for what he had to export. They would see the country becoming rapidly independent of the "nation of shopkeepers," and rapidly occupying the place among the communities of the world which it is fairly entitled to fill—the first place—instead of continuing, as now, to follow in the train of a nation whose every feeling is adverse to its elevation or improvement, and whose every action is directed by a desire to perpetuate the colonial dependence from which it was the object of the war of the Revolution to free ourselves.

We here repeat the invitation to our contemporary to reprint the comments upon his article, pledging ourselves to lay before our readers whatever he may have to say in answer to them. We trust that he will accept our invitation, and thus prove that he himself believes in the truth of the doctrine he desires to advocate.

HARD TO BEAT.—One would think W. S. KING, Esq., of Rhode Island, not easy to be beaten in any thing that he undertakes. He exhibited a short-horn cow, at the late State Fair and Show at Albany, which was, he says, not thought even worthy to be mentioned by the committee. The public may judge, from this fact, that New-York boasts of cows *what is cows* from the following statement, the truth of which Mr. King was ready to verify by two credible witnesses on the ground. With all who know him, his own word would be all-sufficient:—

The short-horn cow, Flora, the property of the writer, was certified to the committee to have given 1,020 quarts of milk in sixty days, and to have averaged sixteen quarts per day for the next thirty days, and to have given nine quarts on the morning of the show, (she gave eight in the evening;) this in her fourth month, and the beast only four years old. A passing injury to one of her teats considerably diminished her yield during the trial. This is equal to over twenty quarts per day, for a cow six years old, or more.

THE EVILS OF DISPERSION.

THE recent floods in the West have been the cause of immense loss and suffering. Thousands upon thousands of farms upon the Mississippi and its tributaries, from Cairo north, were submerged, and their owners compelled to flee to the highlands for their lives. Their crops of course were destroyed—their improvements greatly injured—their stock drowned—their lands in many cases covered with sand; indeed, an estimate of the property lost would amount to millions, and generally speaking, this loss falls upon a class of people poorly able to bear it. The *St. Louis Times* says that five hundred families from Illinois Town and the American Bottom came into St. Louis in great distress. This is but one point among hundreds where the people of the bottoms fled for life and succor.—*Exchange paper.*

There are few facts connected with the history of man more remarkable than is that of the tendency to dispersion over this continent. Every man is flying from his neighbor man almost as if from pestilence. At the West, every paper informs us of the influx of emigrants from the East—farmers from New-England, New-York, New-Jersey, Pennsylvania, and even from Ohio—while at the South-west the migration to the new territories becomes in each successive year more enormous than before. The cause of this is properly explained in a European journal, which describes the agriculture of this country in the following terms:—

At present, but one principle of farming, with trifling exceptions, prevails. This consists in *exhausting the natural soil with a scourging succession of grain crops; then deserting the land, and going on to fresh territories, which are exhausted and deserted in turn.* Nothing like proper restorative culture is known, and never will be till the enterprise of the settler is stopped in its western progress by the Rocky Mountains or the Pacific. In short, it is cheaper to buy new land than to manure the old; and only when there is no more fresh land to purchase, will the art of farming in America be properly known and practised.—*Chambers' Edinburgh Journal.*

It is cheaper, we are here assured, to buy new land than to manure the old, and it is so for the simple reason that the farmer and planter nowhere make a market on the land for the products of the land. They send their wheat and their corn, their pork and their beef, their rice and their cotton, to a distance, that the food may be there consumed by the men who convert the wool into cloth, rather than adopt the measures required for bringing the spinner and the weaver to take their places by their sides, there to consume the food, and thus enabling them to return to the land the refuse of its products. They are perpetually wasting their capital, and then wasting their time in seeking new capital to be again exhausted, and thus exhausting both their land and themselves.

From the same journal we take the following notice of the observations of a recent traveller in the Union, which we most earnestly commend to the notice of such of our readers as desire to understand the cause of the increasing tendency of man to fly from the neighborhood of his brother man, manifested throughout this country:—

A repetition of the remark here occurs respecting the method of cropping lands, which is rapidly deteriorating the soil. In one place mentioned, "wheat has been taken from the land for fifty years in succession." *Diminishing and precarious crops are the consequence.* Latterly, the crop of wheat on these exhausted and ill-used lands *has suffered from diseases incidental to plants of weakly growth. Occasionally the crop entirely fails, and the farmer finds to his cost that nature is not to be outraged with impunity.* Still, few think of restoratives. A usual plan is to change the crop; and potatoes, peas, and oats are therefore coming more into use. Already Lower Canada, and some other old settled parts, are under the necessity of importing wheat; and, says Mr. Johnston very emphatically, "the same consummation is preparing for the more newly-settled parts, unless a change of system takes

place. The new wheat-exporting—so called—granary districts and States will by-and-by gradually lessen in number and extent, and probably lose altogether the ability to export, unless when unusual harvests occur.

We would here beg our readers to remark that the total cessation of the power to export wheat is here predicted by an eminent British agriculturist, as being the necessary consequence of the system which looks to sending from the land all the products of the land, in accordance with the doctrine taught in the British politico-economical school, that England should be permitted to retain her present position of “the workshop of the world,” and that all the farmers and planters of the world should unite in securing to her a monopoly of the machinery for the production of cloth and iron. The writer continues :—

If the population of North America continue to advance at its present rapid rate—especially in the older States of the Union—if large mining and manufacturing populations spring up, the ability to export wheat to Europe will lessen still more rapidly.

Accurate as are in general the views of our author, nothing could be more inaccurate than those here given. The exhaustion of the land and the destruction of the *power* to export wheat is a natural consequence of the *necessity* for depending on distant markets, in which, and on the road to which, the farmer wastes his labor and his manure. The springing up of “large mining and manufacturing populations” would *diminish the necessity* for looking abroad, and *increase the power* to go abroad with wheat and all other of the products of the soil, because the farmer and planter would cease to “scourge the soil,” and the crops would cease to be so “precarious,” because his plants would cease to be “subject to diseases incidental to plants of weakly growth.” He would obtain twice as much food from the same surface, and with no more labor, and his power to go to foreign markets would increase as the extension of the market on the land diminished his necessity for so doing.

“The diminution in the supply of wheat,” says our author, “may be delayed for a time by the rapid settling of new Western States, which from their virgin soils will draw easy returns of grain; but every step westward adds to the cost of transporting produce to the Atlantic border.” This cost *must* be paid by the producer, and that such is the case the producer well knows, as may be seen by the strenuous exertions that are being every where made to obtain roads by which to go to market, and by the increase of the value of the land as roads are made. The object of protection is that of enabling the consumer to *come* and take his place by the side of the producer, and thus relieve the latter at once and for ever from the necessity for *going* to the distant market.

The following remarks are deserving of the careful consideration of every man that desires to see an improvement in the condition of the people of the Union and an increase in the power of the Union itself. To all such we would beg to say, that wealth is power, and that no nation can become powerful whose policy looks to scourging the land and producing a necessity for dispersion :—

In their relation to English markets, therefore, and the prospects and profits of the British farmer, my persuasion is, that, *year by year, our transatlantic cousins will become less and less able—except in extraordinary seasons—to send large supplies of wheat to our island ports; and that, when the virgin freshness shall have been rubbed off their new lands, they will be unable, with their present knowledge and methods, to send wheat to the British market so cheap as the more skilful farmers of Great Britain and Ireland can do. If any one less familiar with practical agriculture doubts that such must be the final effect of the exhausting system now followed on all the lands of North*

America, I need only inform him that the celebrated Lothian farmers, in the immediate neighborhood of Edinburgh, who carry all their crops off the land—as the North American farmers now do—*return on an average ten tons of well-rotted manure every year to every acre, while the American farmer returns nothing.* If the Edinburgh farmer finds this quantity necessary to keep his land in condition, that of the American farmer must go out of condition, and produce inferior crops in a time which will bear a relation to the original richness of the soil, and to the weight of crop it has been in the habit of producing. And when this exhaustion has come, a more costly system of generous husbandry must be introduced, if the crops are to be kept up; and in this more generous system my belief is that the British farmers will have the victory.

Of this there can be no doubt. The British farmer returns to his land “ten tons of rotted manure” per acre, and that manure is the soil of Russia and Poland, of Germany, and of this Union. The farmer of Ohio extracts from his land all the capital for which he purchased it, and transfers the same to the farmer of England, and having done so for a few years he then abandons his land and removes to Illinois, and thence to Iowa or Minnesota, “dragging at each remove a lengthening chain:” for, in the words of our most intelligent traveller, “every step westward adds to the cost of transporting produce to the Atlantic border,” and yet every year adds to the tendency to fly westward, abandoning the rich bottom lands that would pay so largely for the work of clearing and drainage. In many cases, however, the prospect of working out a rich soil induces the settler to place himself in the low lands, and the consequence is found in the perpetual recurrence of facts similar to those described in the paragraph at the head of this article; their lands are submerged, and they are themselves compelled to fly to the high lands to save their lives, their improvements are destroyed, their stock is drowned, and their lands are covered with sand.

Such are the beautiful results of the system which looks to securing to Great Britain a monopoly of the machinery for making cloth and iron; and it is to relieve the planters and farmers of this country from the taxation of a system so exhausting and destructive that we seek protection to both the farmer and planter in their efforts to draw the spindle and the loom, the hammer and the anvil, to take their natural places by the side of their ploughs and their harrows.

H A R V E S T L A B O R .

THE *Frederick Examiner* says: “Our harvest has fairly set in. The wheat and rye crops are very good, well filled, in excellent order, without blight or injury in any respect. Hands are much sought after, and the general complaint is the want of laborers.”

In the immediate vicinity of the farmers who thus complain of want of aid in harvest, are deposits of coal and iron ore unlimited in extent, and there too are to be found numerous furnaces that were built for the purpose of converting the ore, the coal, the limestone, and the food into iron; but those furnaces are now closed, and the people who mined the ore and tended the furnaces have gone West to aid in raising food, when if they had been permitted to remain at home, they would have continued to be consumers of food, and *would always have been at hand to aid the farmer in harvest time.* Combination of effort makes men rich. Dispersion makes them poor. The farmers of Frederick county vote to expel from their neighborhood the millers and furnace-men, and the blacksmiths and carpenters, whose services cease to be needed when the furnace is closed, and then they employ English

miners and furnace-men to make their iron, and their crops sometimes perish in the field for want of aid in harvest. With the cotton-planter it is even worse. He limits his planting because it is useless to plant when he knows that he cannot gather the product. *The loss to the Union from this alone is more than the value of all the merchandise of every description that we receive from England.*

THE NOBILITY OF RUSSIA AND OF AMERICA.

THE private residences of the nobility at Moscow are furnished with unparalleled magnificence, and the museums and libraries which they contain surpass in extent many public collections in other countries. In their style of living the nobles display a similar ambition to rival the grandeur of princes. Some of them have as many as five hundred domestics; and in the banquets which they give, the splendor which reigns around is said to equal the sumptuous exhibitions of Oriental courts. But the state of the people at large is little in accordance with these external signs of power and grandeur.—*Exchange paper.*

The description here given of "the style" of Russian nobility might apply almost to that of some of the "merchant princes" whose fortunes it is the object of British free trade to build up, and it might be advantageous if the farmers and planters of this country were to study who are the people at whose cost the enormous establishments of our trading nobility are maintained. The bushel of corn or the bale of cotton acquires no value from passing into the store of the merchant at one door and out at the other. The one would feed and the other would clothe as many persons if the merchant had no existence. He adds no value to either. *All that he does is to stand between the farmer who raises the corn and the planter who raises the cotton, and to take a portion of each for negotiating their exchanges*, and that portion they would have saved if they had made their exchanges themselves without his intervention. Nevertheless, while himself producing nothing and adding no value to the things that pass through his hands, he it is that every where accumulates the largest fortunes. Mous. Say informs us that "the butchers, bakers, and porkmen of Paris, are pretty sure to retire with a fortune sooner or later; indeed," says he, "I have it from pretty good authority in such matters, that half the houses and real property sold in Paris and its environs are bought up by tradesmen in those lines." (Political Economy, book ii., chap. iv.) The butchers and bakers are *middlemen* living at the cost of the producers and consumers of food, and if the producer of food could bring the consumers to their sides, fewer middlemen would be required, and both producers and consumers would grow rich. In those countries in which the merchant princes have occupied the most conspicuous places, the democracy have always been the poorest. The trading aristocracy of Rome grew in their dimensions precisely as the people became more and more pauperized. The traders of Venice were princes, but the people were enslaved. England transplants her *Barings* and her *Jones Lloyds* into the House of Peers, as she sends her laboring population to the Alms House, and the dimensions of the palaces of the merchant princes of New-York grow in size with the growth of the wretchedness and the crime by which they are surrounded. The object of the tariff of 1842 was that of enabling the farmer and the planter to bring the market to their doors and to enable them to make their own exchanges. That of the tariff of 1846 is to separate the farmer and the planter from the consumers of their products, and to compel them to aid in building up, *at their own cost*, the fortunes of the merchant princes of the earth.

I R R I G A T I O N .

Translated principally from the "Journal d'Agriculture pratique."

BY F. G. SKINNER.

[Concluded.]

Hill-side Meadows.—The irrigation of hill-sides and mountain slopes, as practised at Gerhardsbrunn in Germany, is perfectly suited to the present state of American agriculture, and if generally adopted, it would not fail to add vastly to our production of forage. The hill-side to be watered is grubbed, the stones or rocks that can be conveniently moved are carried off, and the land thoroughly cleansed and reduced to a fine tilth. If, after this, slight depressions remain upon the surface which would retain water, they are filled up, and the land is seeded to grass. As soon as a sod is formed sufficiently close to prevent washing, the main irrigating ditch is cut along the top of the field, with a fall of not more than one foot in 3,500. From the main ditch, small trenches two inches wide are neatly cut in the sod, and follow all the sinuosities of the ground, so as to cover as great a surface as possible with running water. If the surface to be irrigated is old field already turfed over, it is best not to break it up; all that is necessary is to remove any impediments to the sweep of the scythe, to cut the main ditch and trenches, and let the water on immediately; the old sod will soon be replaced by grasses of the best quality.

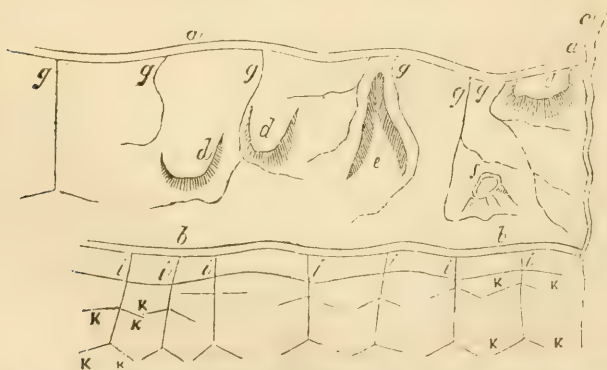
Fig. 18.



as in figures 18 and 19.

a, a, and *b, b,* are the ditches distributing the water derived from *c*, to the

Fig. 19.



upper and lower sections of the meadow—*b, b*, besides taking water from the stream, gathers that descending from the upper section of the meadow.

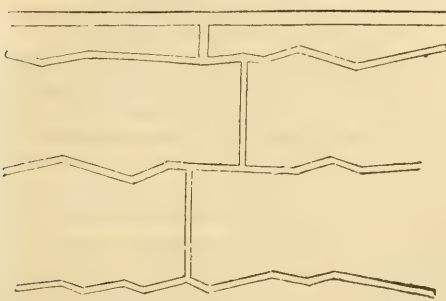
d, d, are rocks or hillocks that could not be removed; *g, g, g,* are the small

irrigating trenches. Below and adjoining the canal *b, b*, is a road by which the hay from the upper section of the meadow is carried off.

i, i, i, i, are vertical trenches terminated by the horizontal trenches *k, k, k*. The road is graded so as to be irrigated and mowed; sometimes it is so arranged that one wheel of the cart runs in the ditch.

Many of the meadows in the district of Gerhardsbrunn are watered in this way; but when in the course of time the eminences are cut down and the depressions in the surfaces filled up, and all obstacles removed, a much better system of irrigation prevails. The bare spots occasioned by cutting down a hillock or filling up a hollow must be sodded or seeded; if there is not enough sod to cover the entire surface, it should be cut into strips and pounded in. The improved irrigation of hilly meadows consists in replacing the irregular cuts by horizontal trenches, which are supplied by a distributing ditch.

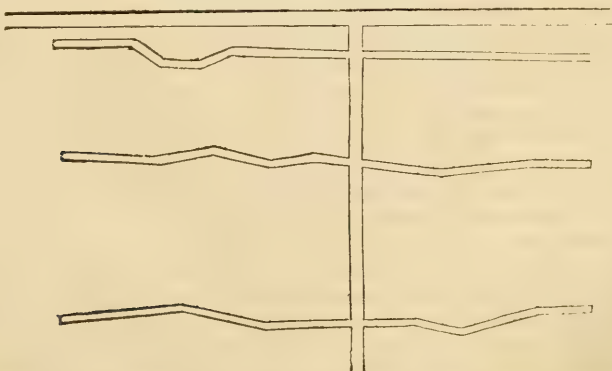
Fig. 20.



The irrigating trenches should be traced by the mason's level. They must be perfectly horizontal, though it is not necessary they should be perfectly straight; on the contrary, they may describe as many curves as the undulations of the surface and the necessity for preserving the horizontal may require.

As before stated, the distance between the trenches depends upon the nature and supply of the water and upon the inclination of the surface. On this subject it is difficult to lay down precise rules, because it would be necessary to measure the quantity of water and the degree of inclination. In general, however, it is best not to be too sparing of the smaller trenches; indeed, there cannot well be too many of them. On surfaces with a fall of four or five feet in a hundred, the distance between them should not exceed eighteen feet. The irrigating trenches may be supplied from the main canal by a vertical trench, or each irrigating trench may have its own feeder proceeding directly from the main canal, (figs. 20, 21.)

Fig. 21.

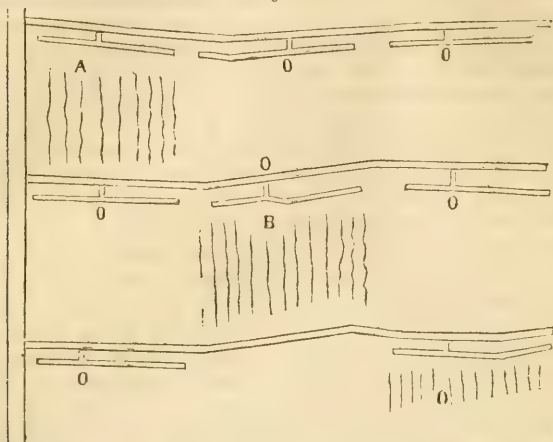


It will be perceived that in figure 20, care has been taken to prevent the vertical trenches from corresponding directly with each other; because, if the

fall (as is supposed in this case) is rapid, these vertical trenches would form a continuous straight line, and the increased action of the water in consequence would soon wash the land into gulleys.

A better arrangement is to furnish each irrigating trench with its own trench of supply, as in figure 22.

Fig. 22.



If there should not be sufficient water to cover the whole surface at once, it is cut off from the different trenches at the points marked O, (an ordinary shingle will answer the purpose,) and only portions of the meadow, as at A, B, C, are irrigated, and the water may be shifted at will, from one spot to another, merely by moving the shingles at O.

General Directions.—The degree and duration of an irrigation may be modified by several causes. Thus, water naturally suited to the purpose may be applied throughout the whole winter, if the cold is not so great as to congeal it. Water of indifferent quality should not be used in winter, unless the meadow is manured. At a short distance from their source, the temperature of nearly all waters is favorable to vegetation, and they may therefore be used at all seasons. The effects of irrigation are also much modified by the seasons, and, as a general rule, autumn waterings are to be preferred; they renew the vigor of plants exhausted by previous cropping, the turf becomes closer, the young plants newly sprouted from the seeds left by the first crop are invigorated to resist the coming winter, and the whole meadow, as it were, clothes itself to encounter the cold, and in early spring the grass starts forth more flourishing than ever. Again, in the fall, water is more abundant; it is more highly charged with the elements of fertility; the ploughed grounds manured for the autumn-sown crops contribute to its richness, and at this season ordinary water becomes good, and good becomes excellent, and the irrigation should be prolonged as much as possible.

As soon as the last crop of grass is removed, and the wounds of the scythe have had time to heal, is the moment to turn on the water. But this is often postponed, in order to graze off the after-math: a portion of the winter provender may be saved by it, but the practice is to be deprecated, for not only is the subsequent crop injured, but the meadow is deprived of water in the month of September, the best of all others for irrigation.

The first waterings may be prolonged for three weeks, or even a month; after each, the meadow should be allowed to become dry. Under all circum-

stances of soil, season, or climate, it is essential the meadow should drain itself easily and rapidly ; for without it, the good effects of irrigation are lost. If the autumn is warm, the waterings must not be of long continuance, and as soon as a little scum or foam is perceived on the grass, they should cease ; to be renewed as soon as the meadow becomes dry. If the water is of the best quality, the irrigation may be continued throughout the autumn, as long as the weather does not become too cold, but the periods of irrigation should be diminished, while those of draining are increased.

In winter, all irrigation with indifferent or bad water should cease, unless the land be well manured, in which case it may be prolonged, until interrupted by hard frost or snow ; and even then, if the quality of the water be good, the temperature high, and the land of easy drainage, there can be no objection to let the water run under the ice ; it is in no danger of freezing, and the turf over which it flows remains green and continues to grow.

If the irrigation has been suspended in winter, the first that is given after the weather moderates should be prolonged ; but the duration of those following must diminish as the season advances until May, when they are usually suspended, particularly if the water is muddy, for it may then "foul" the grass, when nearly ready for the scythe. Another precaution to be observed is, never to turn or take off the water at midday, particularly under a bright sun ; evening is the favorable moment.

The most beneficial irrigations are those given in cloudy and rainy weather. With warm rains and southerly winds, herbaceous vegetation acquires great activity, and the growth of grass is rapid, and should the rain be cold, the brook water tempers its chilling effect upon the meadows.

Late spring frosts are to be dreaded, and all irrigation must cease when they are threatened. After the weather moderates, a few days' watering will repair, in a great degree, any damage that may have been done. If, however, there be an abundance of water at command, a full flow during the prevalence of frost will prove an efficient protection. The water is usually let on in the evening, before the dew falls, or in the morning, after it disappears. There is no reason assigned for this, but it is the usual practice.

Both the extremes of heat and cold are to be avoided during the irrigation ; and if, as before stated, it may go on with suitable water when the thermometer falls one or two degrees below the freezing point, it is on the express condition that the water runs off freely ; for wherever sheets of ice remain in contact with the turf for some time, the shallow-rooted plants will perish, leaving none but those with deep roots, and of little value.

In rainy seasons the object of irrigation is to fecundate, and not to give moisture ; it may therefore be abundant with good water, and should be very slight with that which is bad.

Nature of the Soil.—Varieties in soil induce modifications in its irrigation. Thus, light sands and gravel require longer and more frequent waterings than heavy clays, and these last require a longer time to drain. Inclination of surface is another modifying cause. A light soil, with little inclination of surface, should not be so long or so often under water as if it were much inclined, and a steep clay surface can receive more than a level one. The appearance of scum or foam upon the sod is an indication of suffering in the roots of some of the plants, and is a warning to shut off the water.

The abundance and duration of an irrigation should not be controlled by the vegetable surface alone, for frequently beneath a shallow vegetable surface an impervious clay is found, in which case the watering should be moderate ; if, however, the subsoil be gravel or sand, the irrigation may be more abundant.

Location and Exposure of Meadows.—The site of a meadow has an important bearing on its irrigation: thus, a sloping surface or a southern exposure requires more water than a level surface or a northern aspect. It may be remarked that meadows facing the south, though earlier than others, and producing better forage, are more liable to injury from late frosts, and it is best where the climate is variable not to force them by premature watering. Eastern should be more moderately irrigated than northern exposures, because vegetation is more active upon them, and they are more liable to white frosts. A western, being warmer, requires a little more water than an eastern aspect: and, finally, latitude is a serious consideration, since a southern evidently requires more water than a northern climate.

It may be objected that the wonders wrought by irrigation in Italy, Spain, and other southern countries, are to be attributed to climate, and that the system would not confer equal benefits upon the agriculture of the United States. To show how groundless such an objection would be, it will only be necessary to cite results obtained in England and Scotland, countries where the farmer has to contend, not with parching droughts, as in America, but with too much moisture.

Coleman, in his "European Agriculture," states that the most extensive and finished works of irrigation, or, as they are called there, *water-meadows*, to be found in England, are at Welbeck in Nottinghamshire, at the residence of the Duke of Portland. They considerably exceeded three hundred acres, and were being extended at the time of his visit. These meadows receive no other manure beyond that furnished by the water, yet *every acre, in its produce consumed by cattle on the farm, supplies manure for five acres of other land*. Corringham's Report of Nottinghamshire, alluding to these meadows, states that their annual value had been raised from £80 to £3600. The water-meadows at Audley End farm are described by Mr. Colman as being formed of old pasture without disturbing the sod, and as yielding in two annual cuttings six tons to the acre. The same author concludes his description of the irrigated meadows he saw in England thus:

"I shall close this part of my subject with the remarks of Philip Pusey, Esq., M. P., which are always deserving the highest attention, and which are as applicable to many parts of the United States as to those places to which they immediately refer:—'I have known Mr. Roals' farm for many years. It stands alone on the wild Exmoor range of mountain land. If any one asserted that, for a trifling outlay, he could enable heath-covered steeps to rival, in produce and value, the old grazing grounds of Northamptonshire, he would be regarded as a dreamer. But if any owner of moors will visit Somerset or North Devon, he will ascertain the literal truth of the statement, as I did five years ago. All that is required is a streamlet trickling down the mountain side, or a torrent descending rapidly along the bottom of the glen. *The profit of under-draining old arable land appears trifling when compared with the profit of thus forming water-meadows*; which, according to Mr. Roals, is more than one pound interest for two pounds invested.'

"The two pages of this report, which state no more than Mr. Roals himself has done, contain a talisman by which a mantle of luxuriant verdure might be spread over the mountain moors of Wales and Scotland, of Kerry and Connemara. New-England especially, and many parts of the other States, are full of sites and means for such improvements, and in many cases the expense of labor and levelling the land, bringing the water into a body and placing it under control, would be met many times over by the profits of such improvements."

The account given by Mr. Colman of a system of irrigation with the sewerage water of Edinburgh is exceedingly interesting; and though by no means of general application, it is inserted here entire, with a view of showing how immensely valuable to agriculture would be the wash of our own cities, if, as in the Scotch capital, it were turned to account.

"I come next to speak of a system of irrigation established in Edinburgh, which I looked at with a good deal of interest, where the sewerage water from the drains of the city is applied to grass lands in its neighborhood, which by this means are rendered most extraordinarily productive.

"The drainage water from a large portion of the city of Edinburgh is collected into covered carriers and drains, and from these emptied into a stream of water, very properly, as one may suppose in such a case, called the *Foul Burn*, the term *burn* being the Scottish name for a small stream or brook. Here it passes along in an open brook, among some flat lands, which by proper arrangements it is made to overflow. I should state that, before it reaches the places where it is thus diffused, it is received in tanks, where the more solid parts are deposited. It does not require any extraordinary acuteness of smell, on approaching these irrigated lands, to become satisfied that the waters, even after passing from the cisterns or tanks, are sufficiently charged with odoriferous particles held in suspension.

"This water thus received is diffused over three hundred acres of land; and these lands are rendered productive to a most extraordinary degree. One of the principal proprietors, who held his land under a long lease, at a rent of £5 per acre, and sub-let this irrigated land at £30 per acre, informed me that it was sometimes cut seven times in a season. The grass is carried into the city, a distance of two and three miles, for the support of the cows which supply the city with milk. Different channels or gutters are made for the water, so that the whole may be flooded. It is applied generally after every cutting, where the situation admits of it; but it is found advisable not to apply it immediately upon the grass being cut, nor before it has obtained some small growth.

"The offensive exhalations from meadows thus treated have been the subject of prosecutions at law. In the testimony adduced on these occasions, it has been stated that the rent for which some of these meadows are leased in small portions to cow-feeders varies on an average from £20 to £30 per acre. Some of the richest meadows were let in 1835 at £38 per acre; and in that season of scarce forage, 1826, £57, or \$285, per acre, were obtained for some meadows. The waste land called *Figget Whins*, containing thirty acres, and ten acres of poor sandy soil adjoining them, were formed into water-meadows in 1821, at an expense of £1,000. The pasture of the Figget Whins used to be let for £40 per year, and that of the ten acres at £60. Now, the same ground, as meadows, let for £15 or £20 an acre per year, and will probably let for more, as the land becomes more and more enriched; that is, land which before the irrigation let for about \$500 per year, now, under this improvement, yields an annual rent of from \$3,000 to \$4,000. The irrigation is continued at different times, from the first of April to the middle of September. The parties interested in defending the use of this water for irrigating these lands, maintain that the grass produced in these meadows by this process supports in Edinburgh 3000 cows, and in Leith 600 cows. It is added, 'that the parties interested in the lands estimate the compensation which would induce them to discontinue the practice at £150,000, or \$750,000. This is stated as the sum which the proprietors at the west side of the city would be entitled to, exclusive of those at the east, were the practice abolished by Government.'

It is to be hoped that the results of irrigation above described and vouched for by Mr. Colman, will be sufficient to awaken the American farmer to the incalculable value of the system, and induce him to put in practice the simple rules laid down in this essay.

LECTURE ON HAIR, WOOL, AND SHEEP BREEDING.

THE following interesting lecture upon the new science of "Trichology" was delivered in this city, a few days since, before the "Central Southern Rights Association of Virginia," by PETER A. BROWNE, Esq., LL.D., of Philadelphia. It has been furnished to us for publication at the instance of friends who, having heard it themselves, were unwilling that a paper so full of curious and profitable matter should be kept from the public. We need not say that we are happy that our pages have been made the medium of its publication.

The lecture abounds with curious and valuable information upon a subject of great importance and intimate concern to every farmer, and to the welfare of the State at large—wool raising and wool manufacturing. It also possesses another recommendation, which we cannot refrain from noticing, viz.: It is almost entirely freed from *scientific technicalities*, which few readers can comprehend, and is couched in plain English phrase that all who peruse can understand. We trust every reader will give it careful attention, believing that no one can do so without being amply repaid.—*Southern Planter*.

LECTURE.

Nothing which belongs to the study of nature is insignificant. The naturalist surveys, with interest, *all* the works of the GREAT CREATOR;—with the telescope, he measures the parallax of the distant stars, and with the microscope, he examines the minutest part of the smallest leaf, crystal or infusoria. Nothing for him is too large,—nothing too small, which God has placed within his reach. If that Mighty Being who created the heavens and the earth did not consider it beneath *His* dignity to make so minute as a microscopic object, surely it would be great presumption in man to consider it too small for his examination. We are, therefore, of opinion that making collections of pile, and examining hair and wool under the microscope and with the trichometer,* are exceedingly interesting.

The natural history of man has, within the last ten years, attracted more attention than at any former period of time. It is not to be wondered at, that we should be desirous of knowing the *race* from which we and our immediate ancestors sprung; but, as almost all very ancient history is involved in fable, it often happens, that no positive testimony as to the origin of nations can be obtained; wherefore it is proper and laudable, by fair arguments, founded upon circumstances, to assist the archaeologist in his valuable researches. To do this the ingenuity of modern times has pointed out several methods. Professor Samuel G. Morton has chosen the department of craniology. With great industry and perseverance, he has collected a vast number of human skulls, of all nations and of all ages; and by their examinations, by the measurement of their facial angles, and by ascertaining the capacity of the cavity for the repository of the brain, he has drawn certain conclusions, which have been published, and read with great interest. Professor Samuel S. Haldeman has spent much time in studying the mechanism of the organs of speech, and in a series of very interesting lectures, delivered before the University of Pennsylvania, has laid down rules by which it may be discovered, from the national method of pronouncing certain sounds, which people are allied and which are not, and even which race is the oldest. Mr. Florence, a celebrated French naturalist and anatomist, has devoted his energies to the scrutiny of the human skin and its coloring matter; showing wherein they agree and wherein they disagree, in the different

* An instrument invented by me to ascertain the ductility, elasticity, and tenacity of a fibre at a single operation.

ances. Other writers have taken an account of the customs, manners, and even the prejudices of men, to discover their national connection. I have made an extensive collection of national pile, both ancient and modern, and by studying the shape, direction, inclination and organization, am enabled to divide the whole human family into species.

All these studies are intensely interesting, especially as it is evident that it is upon the combined evidence, to be adduced from the whole of them, that the question of races must, ultimately, be determined.

The peculiar state of the hair of the head, and often of the body and limbs, likewise, is intimately connected with the *health* of the individual. All cutaneous diseases affect the pile, in a greater or less degree; besides which, there are *diseases of the hair*, some of them of a most frightful character, as for instance, *plica polonica*, *favus*, &c. &c. To understand these diseases perfectly, the physician should examine the condition of the pile, and particularly of its root, before he makes out his diagnosis. But no physician can be a competent judge of a *diseased* hair, if he is unacquainted with the character of a *well* one.* Hence it is obvious that the medical student, and even the medical practitioner, is benefited by studying the organism and properties of these integuments. Fortunately I have made a collection, not only of diseased hair, but of the hair of the sick and diseased; which I have examined myself, and submit to the inspection of those who take an interest in such subjects.

I think that there is difference between the hair of the sane and that of the insane; and, with a view to test the accuracy of the position, I have made very large collections of the covering of the head of the last named unfortunate fellow-beings, in no less than five lunatic asylums in the United States, including those sufferers of every variety and stage of that infirmity. To the physician and philanthropist this is a most interesting cabinet.

This is not a title of the contributions that the new science of "TRICHOLOGY" has made to her sister sciences, but we must speak of her assistance to the *arts*.

How is it with AGRICULTURE? Is sheep breeding and raising important? If history tells the truth, there never has been a nation which has fostered it, that has not become opulent. Let others talk of the gold mines of California; our theme is the *golden fleece*! To glean a few grains of metal at the former, hundreds and thousands of our countrymen have sickened, pined, and perished in a distant land, who would have been better, far better employed, in a healthy climate, feeding and tending their flocks; and who, while enriching themselves, would have added to the national prosperity and independence.

Cotton was grown in Georgia as early as 1787, but was not seriously thought of as a great American staple until about 1790. From Oct. 1st, 1790, to Sept. 30th, 1791, the United States exported 189,316 lbs. of cotton. In 1835, the lands used in the United States for the cultivation of cotton were estimated at three hundred and twelve millions of dollars. Sheep breeding, for fine wool, dates as late as 1800, and yet it would not be hazarding too much to say that, even now, the raising of sheep and the wool interest are as important in the United States as was the cotton interest in 1835; and I venture to predict, (let who will sneer at it,) that in thirty years from this time, *wool will become as great an American staple as cotton*.

Until the census is published, we have no very accurate means of ascertaining what is the number of sheep in the United States; but we suppose it may safely be put down at thirty-five or forty millions. Now if we value these at two dollars apiece, which, considering that individuals of good breed are often sold for several hundred dollars, is moderate enough, we have seventy or eighty millions; then if we add three shillings per head for the land and buildings necessary for their shelter and support, we have one hundred and five to one hundred and twenty millions. But there are many persons who hear me, who, recollecting with what avidity every thing was received, in 1835, that was calculated to improve the growth of cotton, will be at a loss to discover why what is advanced by trichology, in regard to breeding and raising sheep and improving the quantity and quality of wool, is now heard with such apparent indifference. Is the examination of a subject which regards thirty-five or forty millions of domestic animals and one hundred millions of real estate so insignificant?

The General Government through the Patent Office, a few years since, sent a special agent to Europe to collect specimens of all the fine wools. He brought back with him samples from Russia, Hungary, Silesia, Prussia and Saxony. They were divided into parcels and sent to the Governors of the different States. The one sent to Pennsylvania lately came to my hands. I measured the wools and compared them with the growth

* Example, the crisped state of oval hair in *plica polonica*.

of our own country, and had the pleasure of announcing what had never before been known, or even *suspected*, viz.:

THAT WE CAN RAISE AS FINE WOOL IN THE UNITED STATES AS ANY COUNTRY IN THE WORLD, AND FINER THAN ANY EXCEPT SAXONY.

This important information, showing that the United States has it in her power to create *another great staple*, equal in importance to her cotton, was published in "The Plough, the Loom and the Anvil,"—was read,—has never been contradicted,—and is now almost forgotten!

Let us now examine this subject in another point of view. Let us assume that the number of sheep in the United States is thirty-five millions. In Germany the average annual produce of fleece is put down at a trifle over two pounds. In England, where the wool is coarser and less valuable, the average is four pounds. Our average is put at from two and a half to two and three quarters; but I am persuaded that it is underrated, for I have in my cabinet specimens of fine wool, grown in the United States, from three and a half to four and even as high as five pounds. But suppose we say three pounds; this will give us an annual produce of one hundred and five millions of pounds; which, at forty cents a pound, will make forty-two millions of dollars. And observe, that in this calculation nothing is said about the increase of lambs. The annual production of all the gold and silver mines of North and South America was estimated by Baron Humboldt at nine millions of pounds sterling; at present, (except the recent discoveries in California,) it is less than five millions of pounds or twenty-five millions of dollars.

Mr. Hughes, a London wool broker, upon his examination before the House of Lords, in England, in 1828, on the subject of wool and woollen manufactures, thus delivered himself:—

"Other countries are making rapid strides to compete with us, [England,] particularly North America. Within the last twelve months there have been upwards of five thousand bags of *foreign* wool shipped from the port of London alone for that country, for the purpose of being manufactured. They [the people of the United States] are now making very rapid strides, and I have no hesitation in believing that, in a few years, they will be independent of us for *coats*, as they now are for *hats*."

I did every thing within my power to have our fine wools exhibited at the World's Fair; had I succeeded, the House of Lords might have learned that Mr. Hughes was a *prophet*, and that the time *has* arrived when the American people can not only be independent of Great Britain for their own coats, but that they can furnish wool, of the growth of the United States, fine enough for the most fastidious of Europe.

England cannot raise the fine wool required for manufacturing broadcloths. Lest we might be suspected of prejudice, hear what is written by *one of her own subjects*.

In "The Industrial Resources of Ireland," by Robert Kane, M.D., honorary member of the Royal Dublin Society, &c., we find the following: "The woollen manufacture has been, at all periods, considered as of high importance in this country [Ireland;] so that, at certain times, it was deemed necessary [by England] to take measures to *moderate its prosperity*. [!]" A very large quantity of wool is grown in Ireland, the total number of sheep being 2,091,199. A great deal of this is sent to France, where it is manufactured into 'mousseline de laine.' After noticing the difference between wool that will felt and full, and fleece [hair] which will not, he proceeds thus: "In moist, cold climates, such as the British islands, the *natural* wool is, universally, long stapled and *unfit for felting*; whilst in dry climates, with hot summers, the wool is short stapled and *felts strongly*. The wool produced *not merely in Ireland*, BUT IN ENGLAND also, is thus *exclusively adapted to the worsted trade*. For woollen cloths and similar goods the wool is *imported from the Continent*. It has often been an object with the English wool-growers and landed proprietors to *produce this felting wool in England*, and thus get rid of the necessity of purchasing abroad; BUT IT HAS BEEN FOUND IMPOSSIBLE, AFTER THE MOST EXPENSIVE EXPERIMENTS, in *importing sheep of particular flocks*. It has been found that in two or three generations, of *even the pure breed*, the influence of the climate and food *totally changed the character of the wool*, and brought it to the same quality as that of the native animals."

We repeat, then, without fear of contradiction, "England cannot produce the fine wools required for manufacturing broadcloths," but she will continue to manufacture these cloths as long as she can find sale for them; consequently she must import fine wool from some other country. Why should not *this* country be the United States? Why not Virginia? Can any one give a reason? If we can produce as fine wool as any

* This puts us in mind of British writers talking of the *arrogance* of New-England in attempting to manufacture.

other country, why may she not import our *wool* as she does our *cotton*? How will it be if we can produce *finer* wool than any other country? And we can produce finer wool than any except Saxony.

Perhaps some may imagine that even if they did take our wool, it would be of small account; let such persons read the following document:

Amount of Foreign Wool imported into England from 1801 to 1805, inclusive. (From Fisher's Industrial Record, vol. 1. p. 207.)

Year.	lbs.	Year.	lbs.	Year.	lbs.
1801, - -	7,371,774	1815, - -	13,640,375	1829, - -	21,516,649
1802, - -	7,669,798	1816, - -	7,517,886	1830, - -	32,305,314
1803, - -	5,904,740	1817, - -	14,061,722	1831, - -	31,652,029
1804, - -	7,921,595	1818, - -	24,749,570	1832, - -	28,142,489
1805, - -	8,069,793	1819, - -	16,100,970	1833, - -	38,076,413
1806, - -	6,775,636	1820, - -	9,775,605	1834, - -	46,455,232
1807, - -	11,487,050	1821, - -	16,622,567	1835, - -	42,604,656
1808, - -	2,284,482	1822, - -	19,058,080	1836, - -	64,239,977
1809, - -	6,758,954	1823, - -	19,336,725	1837, - -	48,379,708
1810, - -	10,914,137	1824, - -	22,564,485	1838, - -	52,606,196
1811, - -	4,732,782	1825, - -	43,816,966	1839, - -	57,364,772
1812, - -	6,983,575	1826, - -	15,989,112	1840, - -	52,959,221
1813, records dest. by fire.		1827, - -	29,115,341	1843, - -	49,343,093
1814, - -	15,492,311	1828, - -	30,236,059	1845, - -	65,079,524

Vast as this consumption appears to be, the United States has the capacity to supply it, after all our own manufactories are supplied; and one would think that it would be highly gratifying to the owners of unseated lands in the United States, in Virginia, to have it proven to them, that they can be turned into sheep-walks, and thus rendered exceedingly productive to their proprietors, and beneficial to the nation. We wish all our hearers could examine my specimens of the *finest kind of wool*, raised upon old, worn-out, tobacco lands, in Bedford county, Virginia. They far surpass any fleece that England ever has, or ever can produce, and will not lose by a comparison with the finest wools of the most favored country on the continent of Europe. Messrs. Robert Allen, Stuart Paterson, H. W. Chaplin, Thos. Patter-on and Robert Kelso, and others, the producers, deserve a vote of thanks from the Virginia Legislature, for their exertions to improve this branch of American industry.

But let us not forget that sheep breeding and raising, to be prosperous and profitable, must be pursued with *some degree of art*. A plain, unsophisticated witness was once asked in court, "*what he followed?*" He answered that it was "*the art of ditching.*" This man was right, for there is an *art* in every occupation, not excepting even the digging of a ditch.

One portion of the *art* of sheep breeding consists in selecting the *proper breed of sheep for the particular location of the farmer*. We have already seen that neither England nor Ireland can raise the *fine-woolled sheep*. Doctor Kane says that it has been found to be *impossible*, after the most expensive experiments. He attributes the failure to *climate* and food. The *natural* food depends upon the *soil* and *climate*; so that he might have said "*soil and climate.*" If it depends upon *climate*, it is fortunate for us, that in this widely extended continent we have almost every variety of it; but still, it is a most important point for the farmer to know which breed of sheep will thrive best and produce the finest wool, in the particular district where Providence has cast his lot. And we confess that upon turning over the leaves of the volume of the Cabinet of American Wools, we were forcibly struck with the correctness of the remark first made at the late Pennsylvania Agricultural Convention, that two parallel lines might be drawn over the map of the United States, including within them the geographical (and perhaps the geological) district best calculated for rearing the *fine-woolled sheep*. We also remarked that there was another extensive district of our country, easily pointed out, which is admirably calculated for raising the fleece which, in England, is called "*long wool*," but which is properly "*hair*." If this information turns out to be correct, (if it is so only to a limited extent,) then my collection of wools, made for a different purpose, will have shed more light upon the connection of climate and soil with wool growing, than all the learned disquisitions and opinions that have ever made their appearance before the public. Two things, we think, are certain: 1st. That the wool staplers and manufacturers will find it to their interest to consult this record, for the best information where they

may find the finest fleece; and 2d. The new beginner in sheep breeding may also there learn where to apply for the best breeds.

But, perhaps, after all that has been said, some persons may believe, that while this information may be well enough for the *sheep breeder and wool manufacturer*, to the public in general it is comparatively useless. But the true patriot, particularly if he be a politician, (in the proper sense of that word,) is deeply interested in knowing what are *all the great and leading interests of his country*.

Every moral, sensible and well educated citizen has a right to expect that he will be, at some period of his life, called upon to act as a member of one of those deliberative bodies that make laws for this free and happy country; but how can he, *understandingly*, give his opinion upon a measure connected with the industrial interests of the country, unless he possesses, at least, a general knowledge of the subjects alluded to in this paper?* Besides, in an economical point of view, does not every man, and even every *woman*, wish to know why it is, in these modern times, that having paid a high price for flannel, and having been subjected to the expense of making it into a garment,—that after having been sent two or three times to the laundress, it has shrunk so much as to be almost, if not entirely, useless? Would it not be a comfort to know *why* the Welsh flannels (formerly held in such high repute) have so depreciated? and to be assured that we have the capacity of producing, in the United States, a *wool that will not shrink*? The author of the "Industrial Record," speaking of Thompsonville, in Connecticut, says that they manufacture carpets, annually, to the amount of 480,000 yards. To enable them to do this, they use 1,000,000 and upwards of pounds of wool, all of which is, he says, imported from either the Mediterranean or South America. But I contend, (and you agree with me in this opinion,) that EVERY POUND OF THIS WOOL OUGHT TO BE RAISED IN OUR SOUTHERN STATES. The sheep that produces *that* fleece thrives *there*, and its breeding and raising, from Delaware to Georgia, would be a source of immense profit.

But here we feel called upon to notice an error into which the editor of the work above quoted has, inadvertently, fallen. He asserts that the importation of the Mediterranean and South American wool, at seven cents a pound, does not interfere, in the slightest degree, with the domestic wool grower, who, he says, cannot afford to raise wool at so low a price, when, with the same food and expense, he can raise fleeces worth, on an average, thirty cents a pound. But he seems to have been entirely unaware of the fact, that the *places* where these hairy fleeces can be grown are unfit for the breeding and raising of the *fine-woolled sheep*. He seems also to have lost sight of the fact, that the sheep, whose wool is worth, as he says, thirty cents a pound, produces, on an average, only three pounds of fleece; whereas of the hairy fleeces, bred in the United States, I have in my cabinet specimens that produced 17½ lbs. Now a schoolboy can cipher this out, to show that this latter wool is the most profitable:

3 lbs. of fine fleece at 30 cents,	\$0 90
17½ lbs. of hairy fleece at 7 cents,	1 22½

Balance in favor of the hairy fleece, \$0 32½

To raise one million of pounds of fleece at 3 lbs. a sheep would require 333,333 sheep.

But to raise one million of pounds of *hairy* fleece, at 17½ lbs. per sheep, would require only 57,140 sheep.

Difference, 76,193 sheep, the feeding and taking care of which would cost \$171,420.

Our brethren of the eastern parts of the Southern States should, therefore, turn their attention to breeding and raising the *hairy sheep*; and Congress should encourage them to do so, by laying a duty on foreign wool, though worth only seven cents a pound.

There is a woollen mill in Lowell, Massachusetts, (the Middlesex Company.) Their wool comes from the States of Vermont, New Hampshire, New-York, Ohio, Pennsylvania, Illinois, Missouri and Wisconsin. The quantity of cloth there manufactured in 1845 was equal to the produce of 400,000 sheep. The broadcloths and cassimeres annually made exceed 114,000 yards of the former, and 620,000 yards of the latter, and the sales exceeded \$800,000 per annum. And there is no reason why the city of Richmond should not follow the example.

The area of this State has been variously stated from sixty-five to seventy thousand square miles, exceeding that of England and Wales, which, together, are only fifty-seven thousand eight hundred and twelve; yet *they* have a population of ten and a half millions, and raise thirty-two millions sheep! The total area of the six New-England States,

* The members of the Central Southern Rights Society of Virginia have solemnly pledged themselves, to each other, and to the people, to foster articles of home growth and home manufacture; it has therefore become their *duty* to investigate this subject.

viz.: Maine, New-Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, is only sixty-three thousand and twenty-six square miles.

The climate of Virginia, though various, is, in general, good. It lies between parallel lines of latitude, which, on the old continent, include Morocco, Syria, Asia Minor, Greece, Sicily, Naples, and the southern part of Spain. Some of these places are famous for producing fine *hairy*-fleeced sheep, and one of them, at least, viz., Spain, is renowned for rearing the fine-woolled Merino breed.

The citizens of Virginia, descended from the hardy and liberty-loving Saxon race, are peculiarly an agricultural people; their great staples have been, hitherto, tobacco, wheat, Indian corn, and in the southern part of the State, cotton; but they *must*, at no distant day, make *fleece* one of their *great staples*. Providence has so decreed it, and, therefore, the sooner it is accomplished the better for the community. I am prepared to prove by specimens that *Western Virginia* can produce as fine *wool* as Saxony; and I have not a doubt but that, in regard to the *hairy fleece*, *Eastern Virginia* will be able to compete with, if not excel, the Mediterranean and South American fleeces.

The easy means of transit of the former of these productions to *Richmond* by navigable streams and artificial means, points out *that city* as the emporium of this valuable commodity; and the exportation of it, either in a raw or in a manufactured state, will greatly improve the commerce of the metropolis.

But this is not all. *Richmond* is destined to become one of the greatest *wool manufacturing* places in the Union. Let us take a *comparative* view of her *water-power*. As Paterson is one of the best known and most appreciated, we will commence there.

Paterson has a fall of sixty-six feet, which is capable of being used three times. The amount of cubic feet of water per second is thirty, on an average of two and a half feet of head discharged from the side of the fore-bay, the bottom of the aperture being three feet. One square foot, drawn in this way, is estimated as equal to a thirteen-horse power; so that the horse-powers may be put down at 1170.

Now, counting 225 spindles to a horse-power, Paterson has a water-power only sufficient to drive 261,251 spindles, or their equivalent.

The James river at Richmond, in 1849, was gauged by Mr. E. H. Gill, a skilful engineer, who found the discharge to be 2,444 cubic feet per second. The fall of the first three miles is eighty-one feet.

Now, if we adopt the same rule for this place as for Paterson, allowing three falls, of twenty feet each, and admitting the average head of two and a half feet, an aperture of twelve square inches will discharge eight cubic feet per second, which will make the James river power, at its lowest stage, equal to 2,673,375 spindles.

To this immense amount of water-power Richmond can add her inexhaustible supply of fuel. Virginia coal, equal in quality for all manufacturing purposes to any found in England, may be had in Richmond for three to three dollars and fifty cents a ton, cheaper than any part of England. The appropriation of a portion (a small portion only) of the water-power of Richmond to the *manufacture* of the *wool* grown in her own *State*, would not only encourage a large portion of their farmers and planters who raise sheep, but would feed and clothe a portion of the *city population*, by employing them in and about the manufactories.

In this country this is a very desirable employment, for while in England a male spinner in a woollen mill receives only ninety-four cents, and in France from forty to fifty-nine cents, in the United States he receives one dollar and eight cents.

At the same time the necessities of life are twenty-five per cent. cheaper than in England.

The objection to manufactories, as injurious to the *morals* of the operatives, has been so triumphantly contradicted by the history of Lowell, that at this day nothing need be urged upon that head.

But every projected operation which may act upon the *health* of the community, deserves to be strictly inquired into; and we think that, considering that in a country like this, where temperature is so continually and so materially changing, for the greater part of the year every man, woman and child in Virginia should be clothed in flannel next the skin; and, therefore, the production of a large supply of *home-made flannel*, from *home-bred sheep*, whose *fleece will not shrink*, would be a national blessing.

But the most important information, as regards the art of sheep breeding and raising, consists in the *crossings*, and those which it is *proper* and those which it is *improper* to make. This information will form the subject of a distinct and entire lecture, which I will read to-morrow evening.

In our next we will give the very curious information elicited from Mr. Browne on "*Trichology*" as a test of insanity, by a commission "*de lunatico inquirendo*" in Philadelphia, a few weeks since.

COTTON AND SUGAR.

GEORGETOWN, Demerara, May 26, 1851.—The raising of cotton and sugar is receiving more than ordinary succor from our capitalists, and more than a half a million of acres, heretofore sterile, are now carefully and scientifically planted, with a reward in prospect of £500 from the British Government, on the production of the first hundred bales of cotton.

Every effort is now being made by Great Britain to secure such a supply of cotton as will establish the price permanently at a point so low as must be ruinous to the planter; and at the same time every effort is being made on the part of the planter to secure to the country that control of all the machinery for converting this cotton into cloth. The planter prefers to employ English laborers, who can scarcely obtain food and have nothing to spare for clothing, when he might have American ones, who would be customers for his great staple to the extent of ten, twelve, or fifteen pounds per head. Under these circumstances, it is somewhat important for him to understand what is the tendency of things in that great market—the workshop of the world—to which he insists on confining himself, in order that Great Britain may fix the price of all she desires to buy, while fixing the price of all she sells, thus leaving to the planter no control over the price of what he either buys or sells; and that he may have that understanding, we invite his attention to the following explanation of the dull and declining state of trade in England, as furnished by the London *Morning Herald* :—

With regard to the depression at Manchester, the uncertain state of the market for the raw material is said to be the cause; but the *Morning Herald* states that *the real cause is notoriously the enormous falling off in the demand for home consumption*, and this fact is carefully concealed by that portion of the press which is under the influence of the free-traders of the manufacturing districts. These writers, as well as the commercial circulars, says the *Herald*, “endeavor to bolster up hopes for the future by stating that the stocks on hand are exceedingly low in the warehouses, as if every person possessing common sense is not aware that the fall in prices will not affect in a corresponding degree all the goods lying on consignment in foreign markets, fabricated at a much higher cost of production.”—*Correspondence of North American*.

If evidence be desired of the truth of this view of the case, it will be found in the fact, that the poor-rates of England and Wales, which, in 1840, '41, and '42, were equal to about 1,470,000 quarters of wheat, were, in 1848–9, equal to two millions and a half quarters.* If further evidence be desired of the declining condition of the population of the United Kingdom, it may be found in the fact, that all that can fly to other lands do fly, leaving the blind and the halt, the infirm and the aged, to be supported at home. In the three years above mentioned, the average emigration was 112,000, whereas in 1848–9 it reached 275,000, and in 1850 it was still greater. What will be the amount this year, it is difficult now to imagine; but if it should continue to the close as it has begun, it must leave the population at a *much lower point* than that at which it stood on the first of January last. The arrivals at New-York of Irish immigrants for the first five months of 1850, were 47,185; while those of 1851 have been 67,651, being an increase of a little less than fifty per cent.

Nevertheless, it is upon this country of diminishing population and diminishing productive power that the planter insists upon making himself dependent for a market for his cotton. How much longer will they need to learn,

* Blackwood's Magazine, March, 1851.

that by bringing the loom to the cotton-field, and thus diminishing the number of *middlemen*, they will cheapen cotton cloth, and double the consumption of cotton? That lesson learned, how much longer will be required to learn that the spindle and the loom can never be effectually established in the cotton fields until they shall take to themselves protection in their efforts to bring the loom and the anvil to the side of the plough and the harrow?

THE POLICY OF DEMOCRATIC PRESIDENTS.

IN a memoir of himself, written by Mr. Jefferson, in 1821, he gives the following account of the fate of a treaty with Portugal, which he and Mr. Adams had made in London in the year 1786:—

While in London, we entered into negotiations with the Chevalier Pinto, Ambassador of Portugal, at that place. The only article of difficulty between us was a stipulation that our breadstuffs should be received in Portugal, in the form of flour as well as of grain. He approved of it himself, but observed that several nobles, of great influence at their court, were the owners of wind-mills in the neighborhood of Lisbon, which depended much for their profits on manufacturing our wheat, and that this stipulation would endanger the whole treaty. We signed it, however, and its fate was what he had candidly portended.

Mr. Jefferson was anxious to secure the profit resulting from *manufacturing the wheat*. He knew that a barrel of flour was the equivalent of nearly five bushels of wheat, and that it contained not only that, but also the food and clothing of the man by whose labor it was converted into flour. He was as fully persuaded as was Adam Smith that “a piece of fine cloth contained in it not only the price of the wool, but also of several thousand pounds weight of corn, the maintenance of the working people” by whom the wool had been converted into cloth, and that though neither the corn nor the wool could bear the expense of transportation to distant markets, the two when compressed together into the piece of cloth might “easily be sent to the remotest corners of the world.” It was reserved for our times to make the discovery that “agriculture is our chief employment,” and that having a “large surplus of agricultural products,” it is therefore necessary to pursue that course of policy which shall more and more increase that “surplus” by forcing our population into agriculture, and more and more diminish our power to combine our food and our wool in the form of cloth, so as to facilitate its transmission to distant countries, there to be exchanged for sugar, tea, coffee, and other raw products of the earth for which our soil and climate are less fitted than for the production of corn or cotton.

In a volume recently published in France,* we find a letter from Mr. Jefferson, dated March, 1815, from which we make the following extract, proving that up to that time he still continued firm in the belief that “the manufacturer should take his place by the side of the agriculturist”:—

We have become manufacturers to an extent that would be scarcely credited by those who have not witnessed it, above all if we consider the little time that has been required to make us so, thanks to the suicidal policy of the English. *The prohibition which we have imposed upon articles of foreign manufacture, and the patriotic resolution of our citizens to use nothing coming from abroad where we could produce it ourselves, without regard to cost, guarantees us for ever from the return of foreign influence; and this should be borne in mind by you in deciding to come and establish yourself amongst us.*

* Œuvres Diverses de M. J. B. Say. Paris, 1848.

Your filature of cotton, on a scale not too extended, combined with the work of cultivation, would be preferable to either separately, and the one or the other might become the principal object according as experience might teach you. Cotton twist is in great demand, and cotton cloth is still more so.

Mr. JEFFERSON saw and fully appreciated the advantage of making a market on the land for the products of the land, and he desired to bring the loom and the anvil into close connection with the plough and the harrow. Such, too, were the views of Mr. MADISON, when, in 1829, he wrote his letter to Judge Cabell, in which he gave his opinion in favor not only of the constitutionality but of the expediency of the policy of protection—*that policy which seeks to obtain perfect freedom of trade by annihilating the monopoly of machinery which it has been the object of the British system to establish.* Such, too, were the views of General JACKSON when he wrote to Dr. Coleman that

Heaven smiled upon and gave us liberty and independence. That same Providence has blessed us with the means of national defense. * * * He has filled our mountains and our plains with minerals—with lead, iron and copper—and given climate and soil for the growth of hemp and wool. These being the grand materials of our national defense, they ought to have extended to them *adequate and fair protection*, that our own *manufactories and laborers may be placed on a fair competition with those of Europe.* * * * In short, sir, we have been too long subject to the British merchants. It is time that we should become a little Americanized, &c. &c.

In 1815 Mr. Jefferson believed that we were guaranteed for ever from the return of foreign influences. In 1824 General Jackson saw that we had been “too long subject to the British merchants.” What would these great men have said had they lived to see the day when Liverpool was illuminated because of the passage of a law which looked to breaking down the manufacture of both cloth and iron, and rendering the whole body of farmers and planters more subject than they had almost ever been to “the British merchants?” It is time that both planters and farmers should open their eyes to the fact that *they it is that must pay the cost of transportation*, and that precisely as the market is brought near to them they grow rich, and precisely as it recedes from them they grow poor. The tariff of 1846 was passed by aid of “foreign influence,” and by that influence it is now maintained, and maintained it will continue to be until we can, in the words of Jackson, *become more Americanized.*

PEAT-CHARCOAL.—(To the Editor of the *Sussex Agricultural Express*.)—Sir:—Having heard of the power of charcoal in deodorizing night-soil or any fetid matter, I was induced to obtain a small quantity from the Irish Amelioration Society's stores, in East Smithfield. On trial, I find that its powers have not been exaggerated; for, by mixing about equal quantities of charcoal and soil, the latter is completely deodorized, and changed to a comparatively dry powder. The cost of the charcoal in Lewes is about £4 per ton, and as this will prepare a ton of night-soil, (which is generally to be had for fetching away,) a manure equal to guano may be had at a cost of £2 per ton and a little labor. In a sanitary point of view, its benefits are greater; for, by covering the surface of the soil in a cesspool occasionally, all smell is prevented from rising, and the formation of noxious *gases* (so detrimental to health) will be avoided. The benefits which Ireland will receive by the employment of her pauperized peasantry in the manufacture of peat-charcoal, will be immense, and may, under the Divine blessing, lead to a better state of things than now exists in that most unfortunate country.—I am, sir, your obedient servant, PETER FULLER, *Malling Mill, Nov. 19, 1850.*

A NATIONAL CONGRESS OF AGRICULTURE.

WE are happy to learn that there is a reasonable prospect of forming a Congress of Agriculture, to be composed of delegates duly appointed by the several State and County Societies, which exist in different parts of the Union. It is the object of this national organization to increase and extend the usefulness of all the associations united in the confederacy, and to promote the formation of similar societies in the States and districts which lack the advantages of these well-tested aids to the improvement both of agriculture and agriculturists.

All must see that the cordial co-operation of the two or three hundred societies now in successful operation in the United States, to advance a common cause, will impart new strength, dignity, and respectability to these valuable associations. As civilized communities are now governed, all great improvements are accomplished by the skilful combination of means and efforts concentrated upon one object. Although there are three millions of farmers in the Union, yet, the professional influence of each being isolated, and all remaining without union or concert of action, they are now no nearer the attainment of a National Board or Bureau of Agriculture than they were when President Washington so earnestly recommended the measure. Indeed, the time will never come when a Congress of politicians will do what ought to be done for the great farming interest of the country, unless this interest is organized in some way to give expression to its views on the subject of agricultural education, by means of schools, colleges, experimental farms, and professional libraries. Agricultural science has nothing whatever to expect from State Legislatures nor from Congress, before its friends form a perfect union among themselves, and act as one man in favor of an increase of facilities for the study of agricultural geology, chemistry, physiology, mechanics, entomology, and all the other important sciences which illustrate the arts of tillage, husbandry, and horticulture. The same principle of associated effort that creates a small agricultural club in a rural district, with a good library of professional books, is capable of extension in this Republic until ten thousand excellent agricultural libraries shall be equally distributed throughout a nation of farmers. Here is a national object worth working for. The State of New-York alone has 10,000 common school libraries; and let State and County Societies unite under a federal constitution, and the creation of a like number of agricultural libraries will be one of the noblest achievements of this new confederacy.

The representative system is well understood by every American; and the National Congress of Agriculture, we understand, will have a delegate from each district that sends a representative or delegate to the United States Congress; and every State Society is to have two delegates, to answer to the two Senators from such States. * Where there are several counties and societies in a district, they are expected to unite in choosing a representative to the Congress of Agriculture. They can, if they think proper, appoint the representative from that district in the political Congress their delegate, or any other worthy citizen that may be at the federal metropolis. The Congress of Agriculture, when assembled, is expected to create a board or bureau to collect information from all parts of the United States, and from foreign countries, to be embodied in a journal which is to be distributed among all the members of the confederacy. The collection and distribution of valuable seeds, cuttings, and plants, is to form another feature in the duties of this central bureau. It will also be prepared to make all necessary analyses of mineral and organic

substances which relate to rural affairs. Science and literature must be fostered in connection with agriculture, if we would elevate this calling to the dignity of a learned and honorable profession. Why teach all hopeful young men to look for an eternal scramble for the spoils and honors of office, as the only road to distinction in this country? Politics are degraded by this mercenary system; and the public good demands that the material and educational interests of the owners of the soil be no longer made the foot-ball of partisan politicians. Farmers can do for themselves all that they need, independently of politicians, if they will only unite for mutual instruction and general improvement. Suppose that a million of the most patriotic contribute each a dollar a year more than they now do for professional knowledge, would it greatly impoverish them? And yet a million of dollars, wisely expended, would do more for the promotion of American agriculture than Congress will do in a century. It is not money nor legislation that is wanting, but a thorough and universal organization. This, and this alone, can give us *the science of agricultural improvement*.

So long as we neglect the principle of associated effort, and despise the matchless advantages of scientific combinations, the larger the numbers in the community, the greater must be our weakness, and the longer our discreditable dependence on others who do combine for every thing of a public nature. Unless the friends of agricultural science and education are willing to see the citizens of this Republic remain fifty years behind those of Europe, in agricultural colleges, schools, and experimental farms, they must concentrate the force of all existing societies into one body, where it will tell with commanding effect. This body being representative and national in its character and objects, may properly be called "The United States Congress of Agriculture." The Central Congress of Agriculture in France has six hundred delegates from the numerous local societies of that Republic; and it is found to work admirably as a common head and bond of union to the whole. It has promoted the organization of other societies in districts where improvements were sadly neglected, and its all-pervading and salutary influence is felt every where, stimulating experiments, research, and the careful saving of all fertilizers. There can be no question of the usefulness of a similar Congress in the United States, where agriculture extends over a vastly wider field.

IRON FENCE.

WE have been shown a model of an iron fence, just patented by Mr. John B. Wickersham, which, for durability and the ease with which it is put together, is far superior to any we have ever seen. By a simple arrangement of a screw at every 300 feet, it can be easily tightened, thus overcoming what has always been the difficulty with wire fences, the great tendency to sway down. Mr. Wickersham's address is, 240 Broadway, New-York. We clip the following notice from the *Public Ledger* :—

IMPROVED IRON FARM FENCE.—Mr. John B. Wickersham, formerly of this city, but now extensively engaged in the manufacture of iron railing, &c., in New-York, has recently patented an improved farm fence, which has many advantages over his original invention, and being much simplified, is greatly reduced in price. The improvement consists in the mode of securing the rails or wires at the posts. Instead of the eyes used in the original invention, through which bolts were passed to bind or strengthen the fence, it is now made in sectional parts, with slots in the post, so arranged that when in place they break

joint with each other. This slot in one section extends upward, and in the other downward, and each rail is furnished with a loop or dead-eye turned in each end, which prevents it from passing through the slots. Double-acting screws are introduced every 300 feet, with which to tighten the fence. The posts are also of an improved form, so as to secure their being fixed permanently in the ground. The iron clamps at the foot of each post are so turned as to present a flat surface of resistance to the earth. The fence thus constructed is warranted to possess an unusual degree of elasticity and strength, and their economy and durability must commend them for general adoption. The cost is but \$1.50 per rod, for the materials of a fence $4\frac{1}{2}$ feet high, with five rails; and the planting of it is so simple that it can be accomplished by the ordinary hands about a farm. The price is about equal to that of a cedar post and rail fence in this neighborhood, while in the western prairies, where timber is scarce and expensive, this iron fence will probably prove the most economical by at least 25 per cent. Paint will of course be requisite to prevent rusting, but a single coat will last for years.

HINTS IN REGARD TO THE PRESERVATION OF PURITY OF BREEDS, AND THE IMPROVEMENT OF STOCK.

WHILE a lad I resided in the same town with an old physician, who then gave the greater part of his attention to the rearing of mules for the West-India market; and there was a fact brought to the notice of all who observed closely, that seems to have a very important bearing upon the retention of purity of blood, and the improvement in the breeds of animals. *It was observed that after a mare had borne a mule, she never would bring forth a colt of any value, because it would possess so much the appearance of a mule as to render it unsaleable.* Suspecting this rule might apply as well to other animals, I observed that a spotted cow of the native breed produced her first calf, whose sire was a deep red, of a similar color to the male parent, and for five or six subsequent years, although she was covered by a spotted, brindle, and a dark-brown bull, yet her calves were all of a deep red.

I made many similar observations at the time, yet, as they were not placed upon record, I do not purpose to refer to them except as it relates to sheep. I lived in a wool-growing region, and we farmers' sons prided ourselves upon wearing home-spun "sheep's gray" for pantaloons; and to be able to keep in the fashion it was necessary to have at least one black sheep in the flock. If one of the ewes brought us a black lamb for her firstling, we felt quite sure she would continue to do so the remainder of her life; and if we already possessed as many of those wearers of sable coats as we wished, the unfortunate amalgamationist was inevitably consigned to the tender mercies of the butcher.

Let it may be thought that what I have considered as spots upon the sun are only specks on my glasses, I will present the corroborating evidence of several English observers. Dr. Harvey, physician to the Aberdeen Royal Institute, says: "A young chestnut mare, seven-eighths Arabian, belonging to the Earl of Morton, was covered in 1815 by a quagga, which is a species of wild ass from Africa, and marked somewhat after the manner of a zebra. The mare was covered but once by the quagga, and after a pregnancy of eleven months and four days gave birth to a hybrid, which had distinct marks of the quagga in the shape of its head, black bars on the legs, shoulders, &c. In 1817, '18, and '21, the same mare (which had in the mean time passed into the possession of Sir Gore Ouseley) was covered by a very fine black Arabian horse, and produced successively three foals that bore unequivocal marks of the quagga." Besides the instance already quoted, there is another similar case recorded: "A mare, belonging also to Sir Gore Ouseley, was covered by a zebra, and gave birth to a striped hybrid. The year following she was covered by a thorough-bred horse, and the next succeeding year by another horse. Both the foals thus produced were striped; that is, partook of the characteristics of the zebra."

In both these instances the mare had produced offspring from males of a different species from themselves. Walker, Baker, and Haller state that they have made similar observations to my own in regard to the ass and mare.

Mr. McGillivray gives two instances of similar results where mares had only been covered by males of their own species, although of a different breed. In the royal stud, at Hampton Court, several mares had bred from the horse Colonel, and the next year, although the foals had been got by the horse Actæon, in several of them there were ob-

served unequivocal marks of the horse Colonel, which had been with the mares the previous year.

The Earl of Suffield had a colt got by the horse Laurel, that so closely resembled another horse Camel, that among the dealers it was boldly asserted that the colt must have been obtained from Camel, until it was ascertained that the dam of the colt had previously borne a colt from Camel.

Similar facts are frequently observed among breeders of cattle; so many, that Mr. McGillivray, after narrating many, says: "Among cattle and horses they are of everyday occurrence."

The Rev. Charles McCombie, of Aberdeenshire, tells of a neighbor of his who had been twice married, and had issue by both husbands, five by the first, and three by the second. Of the last three, one, a girl, bears great resemblance to the first husband, who differed very much in features, complexion, and general appearance from the second. Professor Simpson, of Edinburgh, tells of a Scottish woman who had borne a mulatto child from a negro man, and afterward a girl, whose father was white, had many of the characteristics of the negro race.

Physiologists, while they have admitted the phenomena, have been divided in their modes of explaining the laws that govern them; some supposing that an impression was made upon the imagination of the mother, producing a permanent result, while others deny the possibility of such a cause. The more probable reason to me is this: The offspring and the mother are so intimately connected by the funis, (navel-string,) that the same blood circulates through the veins of each, and thus the progeny of the first impregnations produces a change in the whole organism of the mother, assimilating it in a degree to the male parent. If this be the true explanation, thus do husband and wife become, literally, "bone of one bone, and flesh of one flesh;" and in this manner we can account for the failure of many persons in their endeavor to obtain animals of a perfectly pure breed. Let them look to it that the female has not had her blood tainted by breeding with animals of a different class, previous to her being coupled with those whose peculiar characteristics they wish to perpetuate.

C. H. CLEAVELAND.

Waterbury, Vt., March 12th, 1851.

For more extended and curious information on the subject of cross-breeding, we would refer such of our readers as desire it to a work recently written by Dr. Alexander Harvey, of the Aberdeen University, published by W. Blackwood & Sons, of Edinburgh.—*American Agriculturist*.

OUT-DOOR OCCUPATIONS OF ENGLISH WOMEN.

WE have always thought the *physical education* of our women too much neglected, and had intended to address to our fair readers some remarks upon this head, when the following from Downing's *Horticulturist* came very opportunely to hand:—

The young English woman is less conspicuously accomplished than our young women of the same position in America. There is, perhaps, a little less of the *je ne sais quoi*, [I don't know what,] that nameless grace which captivates at first sight, than with us, but a better and more solid education, more disciplined minds, and above all, more common sense. In the whole art of conversation, including all the topics of the day, with so much of politics as makes a woman really a companion for an intelligent man in his serious thoughts, in history, language, and practical knowledge of the duties of social and domestic life, the English women have, I imagine, few superiors. But what, perhaps, would strike one of our young women most in English society, would be the thorough cultivation and refinement that exists here, along with the absence of all false delicacy.

The fondness of English women (even in the highest rank) for out-of-door life, horses, dogs, fine cattle, animals of all kinds—for their grounds, and, in short, every thing that belongs to their homes, their real, unaffected knowledge of and pleasure in these things, and the unreserved way in which they talk about them, would startle some of my young friends at home, who are educated in the fashionable boarding-school of Madame—to consider all such things "vulgar" and "unlady-like." I accompanied the younger members of the family here this morning in an exploration of the mysteries of the place. No sooner did we make our appearance out of doors than we were saluted by dogs of all degrees, and each had the honor of an interview and personal reception, which seemed to be productive of pleasure on both sides. Then some of the horses were brought out of

the stable, and a parley took place between them and their fair mistresses; some favorite cows were to be petted and looked after, and their good points were descanted on with knowledge and discrimination; and there was the *basse cour*, [poultry-yard, we suppose Mr. D. here means, the word having several different significations,] with its various population, all discussed and shown with such lively unaffected interest, that I soon saw my fair companions were "born to love pigs and chickens."

I have said nothing about the garden, because you know that it is especially the lady's province here. An English woman with no taste for gardening, would be as great a marvel as an angel without wings. And now, were these fresh-looking girls, who have so thoroughly entered into these rustic enjoyments, mere country lasses and dairy maids? By no means. They will converse with you in three or four languages; are thoroughly well grounded in modern literature; sketch from nature with the ease of professional artists, and will sit down to the piano forte and give you an old ballad, or the finest German or Italian music, as your taste may dictate. And yet many of my young countrywomen of their age, whose education—wholly intended for the drawing-room—is far below what I have described, would have half fainted with terror, and half blushed with false delicacy, twenty times in the course of the morning, with the discussions of the farm-yard, meadow, and stables, which properly belong to a wholesome country life, and are not in the slightest degree at variance with real delicacy and refinement. I very well know that there are many sensibly educated young women at home, who have the same breadth of cultivation, and the same variety of resources, that make the English women such truly agreeable companions; but, alas! I also know that there are many whose beau ideal is bounded by a circle that contains the latest fashionable dance for the feet, the latest fashionable novel for the head, and the latest fashionable fancy work for the fingers.

PREPARATION OF FLAX COTTON.

THE excitement on the subject of flax manufacture is such as to induce us to republish the following extract from the proceedings of the Royal Flax Society in England, though we have no faith in the substitution of flax for cotton to any material extent:—

Dr. RYAN commenced his address to the meeting by stating that since the subject of the Chevalier's invention had been brought before the Council, he had been down to Bradford, for the purpose of witnessing, on a large scale, the practical operation of M. Claussen's plan, and he should now have much pleasure in detailing the results of his observations. Dr. Ryan begged also to remark that he was not there for the purpose of finding fault with any of the existing processes for preparing flax fibre, but merely, as the Chevalier's chemical advocate, to point out to the Society the advantages of what he might be allowed to term a most beautiful discovery. Before, however, he proceeded further, he would take the liberty of answering at once an objection made by Mr. Beale Browne, that it would be impossible to mix flax cotton, or fibre, with common cotton, because of the difference in the specific gravity of the two; that flax would make cotton goods heavier. This was Mr. Browne's objection; but Dr. Ryan could inform him that, although flax fibre, in its usual state, was specifically heavier than cotton, yet, when prepared by Chevalier Claussen's plan, it became exactly of the same gravity as American cotton. He then proceeded to detail the operations at the works of Messrs. Quitzow and Co., at Apperley-bridge, near Bradford, Yorkshire. He described the process of preparing the straw for scutching as one which only occupied four hours, instead of five days—the shortest period under even the patent of the late Mr. Schenck, the one now patronized by the Royal Flax Society of Ireland. The materials employed by M. Claussen were merely soda and sulphuric acid, and these in such a form and in such quantities as not to injure the most delicate fabric. Thus the proportion of soda was only one part in 200 parts of water. The acid was added after the straw had been boiled with the soda; and the objections to the employment of such a substance would be overcome by remarking that the proportion of the acid was only one to 500 of water, and that the soda present in the straw neutralizes the whole of the acid, and forms a neutral salt—sulphate of soda. Dr. Ryan then proceeded to state that means had been adopted to ascertain the strength of fibre thus prepared, in comparison with that prepared by Schenck's process, and the result was highly satisfactory. In the next place Dr. Ryan explained the process of cottonizing the flax, or in other words, of splitting its fibre, and converting it into a material which could scarcely be distinguished from the finest American cotton. This he considered the most beautiful and useful portion of the

discovery, opening, as it did, a new market to the flax-grower, and enabling the manufacturer to spin it on any machinery hitherto employed for cotton, silk, or wool. Dr. Ryan then detailed the process itself, pointing out the elastic force of the carbonic acid gas liberated in the tubes of the flax fibre by the action of an acid on the carbonate of soda, or of potash. He also stated that he came prepared to show to the meeting, practically, by experiment, the processes of splitting and of bleaching—experiments which would render the matter intelligible to every one present.

At this moment Dr. Ryan handed to Professor Way, the consulting chemist to the Society, a copy of Chevalier Claussen's specification; and it may be stated that in a few moments the Professor returned to the council-room, and remarked that he had just himself tried the experiments according to the directions of the inventor, and had perfectly succeeded in splitting and bleaching some flax fibre. It was therefore suggested to the Chairman by Dr. Ryan, that as Professor Way was a perfectly disinterested party, it would be better for him to operate before the meeting. This Professor Way did most successfully, bleaching and splitting a quantity of flax in the course of about two minutes.

Although we have long been practically familiar with the expansive effects of æri-form fluids suddenly disengaged chemically from an apparently solid and inert substance like gunpowder, either in fire-arms or the blasting of rocks, and with their elastic recoil when released from the pressure of condensation, as in the air-gun or the liquid gases of Dr. Faraday, we were not prepared for so beautiful an instance of the application of this principle as the one Chevalier Claussen has given us in the splitting of vegetable fibre, by conveying into its interstices the carbonic acid gas concealed in condensation and chemical alliance with soda, and then setting it free by the addition of acid, which breaks off that alliance by its own superior elective affinity for the alkali. Means shown in their result to be so powerful, and in their operation so gentle yet decisive, gave to the simple experiment made in the presence of the Council by Professor Way, more the air of a new instance of natural magic than the sober reality of an ordinary operation of natural laws, of which the application only was novel; and its effect on the meeting was accordingly both singular and striking, occasioning evident marks of their agreeable surprise and admiration at the result obtained. The flax fibre soaked in the solution of sub-carbonate of soda was no sooner immersed in the vessel containing the acidulated water than its character became at once changed, from that of a damp rigid aggregation of flax to a light expansive mass of cottony texture, increasing in size like leavening dough, or an expanding sponge. The change was no less striking, when this converted mass in its turn was placed in the next vessel which contained the hypochlorite of magnesia, and became at once bleached, attaining then the color, as it had just before received the texture, of cotton.

"LET us now," said Mr. Jefferson to Mr. Austin, "place the manufacturer by the side of the agriculturist." Well might he say it, for while there is no State in the Union where the plough could be made to yield more than in Virginia, on account of superiority of soil and climate, there is none which has suffered more, for want of the manufacturer being placed by the side of the agriculturist; nor one, we may add, where materials and water-power for the use of the manufacturer are more convenient and abundant.

For the manufacture of cloth and iron she has wheat, corn, wool, iron ore and coal, or the means of producing them, without limit. We have before stated that, with all her societies for agricultural improvement, abounding over the State, thirty years ago, and with all the admitted intelligence of her landholders, the produce per acre of the Valley of Virginia has fallen probably at least ten per cent., in the last twenty years.

Thirty years ago, the late W. Steenbergen's crop from ten hands was 12,750 bushels of grain, averaging not less than fifty bushels of corn to the acre, and twenty-five of wheat and rye. Here we see each hand making 1275 bushels of grain to each hand, of which he and his team of two horses consumed probably not more than two hundred bushels, leaving 1075 bushels for each hand to *find a market* somewhere. Now, does not this over-production of the great machine show the necessity of having the small machines clustered close about the plough and the harrow?

NEW AND VALUABLE DISCOVERY IN LAND DRAINING.

WE extract the following from a late English journal:—

We cannot commence our labors in a manner more advantageous to the public, and more satisfactory to ourselves, than by laying before our readers some results of a new discovery in this neighborhood, which it appears to us is calculated to secure most important and immediate benefits to all connected with the cultivation of the soil. We allude to Mr. Cotgreave's (of Eccleston) new practice of draining, in which three vitally important considerations are comprehended, viz.: economy of outlay, economy of time, and increased employment of labor, with its judicious and profitable distribution.

Mr. Cotgreave's principle consists of a series of ploughs derived from the carpenter's plane; in fact, it is nothing more nor less than a land-plane; and when seen, every one must wonder why the principle now brought into operation has not been applied years ago. With the exception of the main drains, all the work, even to the obtaining the perfect level of the drain, is performed by the plough-plane. Mr. Cotgreave has so adapted his plough that with four horses he can throw out a drain from four to five feet deep. The saving of time is another material object. The work by this process is almost incredibly expeditious, and very little damage is done to the surface; indeed, in grass lands a heavy roller will repair all damages. *The cost of workmanship is half the price of manual labor on the present system, and the time occupied one tenth*; while the work, to say the very least, is as efficiently and durably performed.

In the neighborhood where the plough has been used, much has been said of the probability of the implement throwing many men out of employ. This we contend is erroneous, because the want of such an economical implement has hitherto prevented draining to any great extent being carried on. As the agricultural markets now are, the farmer too frequently says, with truth, "Such a field is so wet and poor, I cannot work it." Consequently that land is thrown out of cultivation; and, as land is abandoned to take its chance, so the assistance of laborers is dispensed with. Poverty and poor-rates increase; and crime inevitably follows in the wake. But if the expense of draining is brought within compass, then, as a matter of course, more land will be drained, more laborers permanently employed, and the agriculturist will have a chance of so increasing his produce, that he may earn a livelihood, and, by extra exertion, something more.

The working of the plough-plane is a problem many may doubt: we did so; but we saw, and were convinced of its powers and efficiency.

All who have witnessed the operation of Mr. Cotgreave's draining plough are unanimous in their approbation of the plan, and their conviction of its full and complete success.

We are desirous of calling the attention of the land-owners and holders to the actual merits of this most clever adaptation of the plane; deeming that merit of every kind imperatively commands the attention of the public press most particularly.

Mr. Cotgreave has, most fortunately, that kind of education which is well adapted to his occupation, viz., that of land-valuer and surveyor. His experience as a land-valuer has been called into operation by the Tithe Commutation Act to a great extent; and for the performance of the duties thereto annexed, he must, of necessity, have considerable knowledge of the nature of soils generally. Added to this, he has a large clay farm in cultivation, in his own hands, the treatment of which needs no more reference from us, save that those who wish to know how he works it can see, if they will visit his farm.

We now proceed to the detail of the plough. We find that the necessary staff of men is ten, and of horses four; and with this at command Mr. Cotgreave will be enabled, without distressing either horses or men, to commence two statute acres in the morning, and finally complete, that is, cut the drains, (including the main drain,) lay the pipes, fill in and make good the surface of one statute acre, and half prepare the second to be ready for work the next day. The plough, as we have already explained, is on the plane principle, and, by means of screws, can be adapted as occasion requires, even while in operation in the cutting, to take a shaving of two, three, four, five, or six inches in depth. This control of the plough is most necessary, as it must be evident that certain portions of the land requiring to be drained frequently have undulations; and if there were no regulating principle, it is quite certain no water level could be obtained by a plough. This point we particularly impress on the attention of our readers, because every practical man at first would inquire how this difficulty is to be overcome.

Again—How is the plough to work when a stone obstructs it? This has been considered by Mr. Cotgreave and provided for. If the stone is too large to pass along the plane, or too deep to be turned up by the cutting-in operation, the coulter of the plough is so formed as to protect the share, and with a lever and hooked instrument the stone is

removed ere the plough returns, when the *debris* of the obstruction, in addition to the shaving (if we may so call it) then in process of casting out, are removed at one and the same time.

One of its great recommendations is that it is adapted to every variety and condition of soil, and that it can be worked almost independently of the weather, unless the frost is very intense. In fact, those who have witnessed the plough at work are at a loss which most to admire—the absence of complexity in the contrivance, or the rapidity and perfect success of the operation.

For the purpose of expedition and efficient workmanship, the land-owner ought, before commencing with the plough, to have the pipes of both mains and tributary drains *in the field*.

Mr. Cotgreave's system is to commence with spades, and complete the whole of the main drains before he begins with his plough. He then casts out, with his plough, the clod, measuring six inches square, on the left side of the intended drain, over the compass of two statute acres. This is of great advantage where there is much surface water, as the process of draining immediately commences and renders the land less liable to damage by the treading of the horses; and the main drain being cut, the water percolates to it, and so passes off. He then returns to the first acre, and with the same plough casts out on the right-hand side the sub-soil. To attain the depth of eighteen inches by six inches wide, he requires four drafts—viz, the first six inches, the remaining three four inches each. The plough is then changed for one which will cast out its shaving two inches wide by six inches deep. With this he attains a level bottom. Then commences the pipe-laying. To insure the level, a gauge is passed along the bottom of the drain. This effects the double object of clearing any fallen soil out, and forming a perfect bed for the pipes. As the drain is too narrow to admit of a man getting into it, a new process of laying the pipes is adopted—viz, threading them on a half-inch iron bar, the one end trailing in the drain and the other end in a man's hand. The rapidity and perfectness with which the pipes are thus laid is surprising. A man then follows with a sort of paddle, with which he completely adjusts the pipes, and if there are any spaces by breakage, or otherwise, he repairs the damage. The drain is then ready for filling up, which process again is rapidly executed, and the first clod, in almost *one entire piece* the whole length of the drain, is rolled on to its bed.

We think we have said enough to excite a reasonable curiosity in all to witness the operation of this valuable implement, and a natural desire on the part of agriculturists to profit by a process so easy in its application, so effectual in its results, and the benefits of which can be appropriated at *half the cost, and one-tenth less time*, than the prevailing practice.

THE BENEFIT OF MAKING A MARKET ON THE LAND FOR THE PRODUCTS OF THE LAND.

THE strawberry trade of New-Jersey is much greater than would be supposed. It is said that on one night of last week one hundred and thirty-two wagons full of the fruit passed over the Hoboken ferry, principally from the vicinity of Hackensack, Paterson, New-Durham, and Bergen. One gardener near Bergen is said to have cleared \$1500 this season. A large profit is reported to be derived also from the manufacture of baskets in which the fruit is conveyed to market, although they are sold at the low rate of one cent each.—*Philadelphia North American*.

Why has not every part of the country its trade in strawberries and in those other products of the earth that from their delicacy or their bulk will not bear carriage? Because the farmers and planters are almost every where determined that the market shall not be brought to their doors, and equally determined to close those markets which were created under the benign influence of the tariff of 1842. With the growth of mills and furnaces throughout the country, there would be made by them a market for fresh milk, and veal, and strawberries, and apples, and the thousands of other things that could not be sent to distant markets, and with the growth of that market there would be a corresponding growth in the value of land; and then the farmers would grow rich, and they would cease to be compelled to fly to distant lands, the cost of transportation from which absorbs nearly the

whole value of the product. But recently we were told of the enormous richness of the lands of Ohio, and yet the farmers of that State have already reduced the average crop of wheat to less than twelve bushels to the acre, the consequence of which is given in the following paragraph, which we take from an exchange paper:—

EMIGRATION TO MICHIGAN.—The disposition to move West is hard to repress even among the Buck-eyes, and thousands are annually leaving Ohio for newer homes at various points all along to the Pacific.

Every man that goes out from Ohio tends to diminish the value of all the land of that State, and every man that comes into it tends to increase that value. *Population makes the food come from the rich soils, and makes the land-owner and laborer rich.* Depopulation forces men back to the poor soils, and impoverishes both the laborer and the land-owner.

BRITISH IRON AND VIRGINIA RAILROADS.

TEMPTED by the quiet air of the place, and by the unexceptionable "cuisine" of our friend Newton, of the Mansion House, we now and then make our escape from Uncle Sam's tread-mill in Washington, and enjoy a day in Alexandria. A few days since our attention was attracted to the enormous piles of iron rails accumulated there, for the use of the Orange and Manasses Gap railroads, and upon inquiry we ascertained that the rails were not only of British manufacture, but that they had been brought over in British vessels. While we rejoiced at such palpable evidence of the advance of internal improvement in the Old Dominion, we could not but regret the blindness of a people, who, possessing in boundless profusion all the elements of which these very rails are composed, continue in a state of self-imposed vassalage to the British monopolist. We have every reason, however, to hope; the Old State is waking up; her internal improvement policy shows that she has one eye open; when she opens the other, she will make her own iron. On this subject the following admirable article from the *Washington Republic* we substitute for one of our own concoction:—

IMPORTATIONS.—"We are happy to have it in our power to announce that the British barques Avon and Mary, with eight hundred and fifty tons of the iron rails for this road, [the Manasses Gap,] are now on the way from Wales, and may be expected here by the last of July. These cargoes will be followed monthly by others, to the extent of 3,250 tons in all."

The above is from the *Alexandria Gazette*, and is one of those little items which speak volumes. The iron which has been brought by the *British* barques will probably pass over, or be laid upon or near, the very materials of which and by which it was formed, namely: iron ore, limestone, and coal. But the *labor* of gathering these together, and of making the iron, the breadstuffs, clothing, houses, &c., &c., of the laborers employed in manufacturing the iron, the merchants who purchase, store, and ship it, and the ship which brings it from England to this country, are all British, and must be paid for by American gold. How much better would it be for Virginia, if, instead of sending to England for her railroad iron, she were to encourage the manufacture of it within her own borders. In that case, instead of her coal, limestone, and ore lying worthless in her own mountains, they would be turned into mines more valuable than her gold mines; her farmers, besides finding a market for these materials which now possess no value, would find employment for their negroes, mules, horses, and wagons, in digging them from the earth and hauling them to furnaces. They would also be furnished with a market at their own doors, not only for their flour, corn, cornmeal, oats, rye, &c., but for their potatoes, cabbages, beets, carrots, peas, beans, chickens, turkeys, geese, eggs, butter, cheese, milk, beef, pork horses, and mules—in short, for every thing they could raise on their farms or dig out of them; every thing which laboring men and their families need to make them comfortable.

The demand for the products of the farm would at once stimulate the industry of the farmer, and he would cultivate two hundred acres where he now cultivates but one hundred; and in a very short time raise four times as much from each acre as he now does. Then the commissions of the merchants, the storage, wharfage, and freight of the iron would be saved; or, at any rate, whatever transportation was necessary to take the iron to the place where it was to be used, would be done by our own people and our teams, which must be fed and supported by the products of our own farms; and thus all the money employed would pass from hand to hand among ourselves, and each one who contributed labor in any shape, whether in the form of manual labor, horse or mule labor, flour, corn, beef, pork, &c.—for all these things are the products of labor—would receive his due proportion.

Instead of this, however, Virginia thinks it the best policy to buy every thing, and let her own resources go to waste, her own farms grow up with pines and scrub oaks, and the whole face of her country to wear the appearance of shiftlessness, indolence, and decay. We must make some exceptions, however, for here and there her farmers are beginning to wake up and introduce improved cultivation, in imitation of their neighbors in Maryland and Delaware, and of some who have gone in among them.

So long, however, as this country pursues the policy of buying that which we can just as well produce, of employing foreign labor instead of our own, so long shall we fail to reach that state of general prosperity, thrift, and enterprise of which we are abundantly capable.

But we are told that the country is now enjoying an unprecedented degree of prosperity, and the very large receipts of customs are pointed to as an evidence of it. We have noted these large receipts, and we have observed too the constant stream of gold that is passing from the United States to England and France, to enrich those countries, whose labor is thus draining us, while ours is left uncared for, and our laborers are often driven out of employment by foreign competition, and compelled to seek a livelihood by ways and means to which they are wholly unaccustomed, and in which whatever of skill and experience they have acquired are of no avail.

We have observed, too, that notwithstanding the constant stream of gold that is flowing from this country to Europe, we are accumulating an enormous foreign debt for articles of convenience and luxury, most of which we could just as well manufacture at home, and thus keep our money to enrich our own farmers, mechanics, and artisans. If our country is prosperous in spite of this constant drain of its gold and silver, what would be its prosperity if that drain were cut off, and the currents which now flow from the United States and fertilize all Europe were turned back upon our own soil, and made to fill the pockets of our own citizens!

We have no very accurate means of ascertaining the amount of indebtedness which stands upon the books of Europe against us, but we suppose it to be not less, and it may be considerably more, than three hundred millions of dollars! At least we have heard it estimated at that by those whose interests sharpen their attention to these matters. Now, if this is not an over-estimate, we are paying an annual tribute to Europe, in the shape of interest, of not less than from \$1,500,000 to \$1,800,000, and this is constantly on the increase.

A similar state of things existed in 1836-'7-'8, except that we had then no California mines to supply the means to pay for our enormous importations, and the consequence was a general bankruptcy and break-down, as it must always be to those who buy more than their earnings will pay for, unless they have an exhaustless treasury to draw upon.

The following paragraph, from an article in the *London Times*, virtually tells us that we are but colonies of Great Britain, and in a state of semi-dependence upon them; and there is, we fear, too much truth in the rather taunting remark, that we take their manufactures and surplus population, and give them in return "*the materials of industry, of revenue, and of life.*" We are quite ready to take their population, if it is not sent to us from their poor-houses; but while laborers are pouring into the country, it seems to be a strange policy to send abroad those materials which it could find profitable employment in working up into such fabrics as we need, and now import at such an immense cost. We see not why the profits of converting these materials into manufactures might not as well go into our pockets as those of the "cotton lords" of England:—

"It is no empty compliment, but a literal truth, that this flourishing condition of the United States revenue is as great a blessing to us as an equal excess in our own revenue. For all practical purposes the United States are far more closely united with this kingdom than any one of our colonies; and while these communities are colonies in name, but in reality either prison, garrison, or independent communities, the United States keeps up a perpetual interchange of the most important good offices; taking our manufactures, and our surplus population, and giving us in return the materials of industry, of revenue, and of life."

STATEMENT OF L. G. MORRIS'S SECOND ANNUAL SALE,
ON 24th JUNE, 1851.

SOME remarks which were to be furnished, introductory to the following list, having failed to reach us, we are obliged at the last moment to send it to press "without note or comment." We presume something will be furnished on the subject for the next number.—PRINTER.

THOROUGH-BRED SHORT-HORN COWS, HEIFERS, AND HEIFER CALVES.

Lot 1.	York, General Cadwalader, Philadelphia,	- - - - -	\$110 00
2.	Cleopatra, 9 years, do. do.	- - - - -	85 00
*4.	Coquette, 4 years, Edward H. Smith, Smithtown,	- - - - -	50 00
5.	Red Lady, 4 years, General Cadwalader, Philadelphia,	- - - - -	175 00
6.	Eleanora, 4 years, do. do. do.	- - - - -	135 00
8.	Miss Rolfe, 2 years, A. Van Ingen, jr.,	- - - - -	105 00
9.	Fame, 16 months, General Cadwalader, Philadelphia,	- - - - -	60 00
*10.	Red Rose, 15 months, G. Hopkins, Long Island,	- - - - -	30 00
11.	Kate, 5 months, G. G. Hubbard, West Needham, Mass.,	- - - - -	140 00
12.	Lily, 3½ months, Joel Terrill, Oswego,	- - - - -	80 00
13.	Beulah, 2½, General Cadwalader, Philadelphia,	- - - - -	55 00
14.	Pocahontas, 11 years, Henry Parsons, Canada West,	- - - - -	100 00

IMPROVED DAIRY STOCK.—COWS, HEIFERS, AND HEIFER CALVES.

15.	Beauty, 6 years, Dr. A. Smith, New-Rochelle,	- - - - -	\$105 00
16.	Sue, 8 years, Richard Lewis, New-York,	- - - - -	100 00
17.	Watson, Henry Parsons, Canada West,	- - - - -	80 00
18.	Strawberry, General Cadwalader, Philadelphia,	- - - - -	75 00
19.	Bess, 6 years, G. Hopkins, Long-Island,	- - - - -	65 00
20.	Gazelle, 4 years, G. W. Thacher, Pelham,	- - - - -	105 00
21.	Alarm, 3 years, John Rae, Morrisania,	- - - - -	37 50
22.	Lady Independence, 3 years, Robert Legoin, Richmond Co.,	- - - - -	67 50
23.	Miss Stewart, 2 years, James Robertson, Peekskill,	- - - - -	70 00
24.	Harlem Maid, 2 years, General Cadwalader, Philadelphia,	- - - - -	75 00
25.	Lady Canning, 2 years, G. G. Wilmerding, Suffolk Co., L. I.,	- - - - -	120 00
26.	Marietta, 2 years, General Cadwalader, Philadelphia,	- - - - -	70 00
27.	Sabina, 2 years, Dr. Smith, New-Rochelle,	- - - - -	77 50
28.	Miss Mary, 19 months, Robert Legoin, Richmond Co.,	- - - - -	75 00
29.	Bessie, J. J. Mapes, New-Jersey,	- - - - -	35 00
30.	Clara, 14 months, Robert Legoin, Richmond Co.,	- - - - -	30 00
31.	Laura, 10 months, General Cadwalader, Philadelphia,	- - - - -	30 00
32.	Lucy, General Cadwalader, Philadelphia,	- - - - -	37 50
33.	Helen, 3½ months, Morris Ketchum, New-York,	- - - - -	100 00

SHORT-HORN AND AYRSHIRE CROSS.

34.	Countess, 4 years, General Cadwalader, Philadelphia,	- - - - -	82 50
35.	Irannie, 2 years, Morris Ketchum, New-York,	- - - - -	90 00
36.	Betty Merryman, 9 months, P. R. Paulding, Tarrytown,	- - - - -	60 00

NEARLY THOROUGH-BRED DUTCH.

37.	Julia Edgar, Lewis Livingston, Rhinebeck, Dutchess Co.,	- - - - -	120 00
38.	Dinah, do. do. do.	- - - - -	37 50

OXEN.

39.	1 yoke of oxen, S. T. Wright,	- - - - -	145 00
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BULLS AND BULL CALVES.—THOROUGH-BRED SHORT-HORN.

Lot 1.	Logan, 23 months, Oliver Slate, jr., Throg's Neck,	- - - - -	\$175 00
4.	Mark Anthony, 4 months, J. B. Wilson, Wisconsin,	- - - - -	135 00
5.	Passaic, 2 months, Joel Terrill, Oswego,	- - - - -	50 00

SLIGHTLY CROSSED WITH AMSTERDAM DUTCH.

6. Pontiac, 16 months, J. G. Godwin, Kingsbridge,	- - -	70 00
7. Red Rover, 4 $\frac{3}{4}$ months, T. C. Rives, Virginia,	- - -	105 00
8. Medley, 11 months, Edward Biddle, Rockaway, N. J.,	- - -	65 00

PURE BRED DEVON.

10. Barton, 16 months, General Cadwalader, Philadelphia,	- -	145 00
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BUCK LAMBS.

Lot 1. Buck Lamb, 3 months, Aaron Clements, Philadelphia,	- - -	\$30 00
2. Do. do. 2 $\frac{3}{4}$ months, Edward G. Fail, West Farms,	- - -	30 00
3. Do. do. 3 $\frac{1}{2}$ months, Lincoln Brooks, Providence, R. I.,	- - -	30 00
4. Do. do. 3 $\frac{1}{4}$ months, General Cadwalader, Philadelphia,	- - -	30 00
5. Do. do. 2 months, do. do. do. do. do. do. do. do.	- - -	25 00

SWINE.

Lot 1. One pair of Pigs, Henry Parsons, Canada West,	- - -	\$37 50
2. Do. do. General Cadwalader, Philadelphia,	- - -	30 00
3. Do. do. Churchwell,	- - -	30 00
4 and 5. Two pair do. G. G. Hubbard, West Needham, Mass.,	- - -	50 00
6. One pair do. Captain Spencer,	- - -	20 00
7. Do. do. Thomas Hancock, Burlington, N. J.,	- - -	20 00
8. Do. do. Henry Parsons, Canada West,	- - -	30 00
9. Do. do. Aaron Clement, Philadelphia,	- - -	27 50
10. Single Boar Pig, Lewis Livingston, Rhinebeck, Dutchess Co.,	- - -	17 00
11. Do. do. General Cadwalader, Philadelphia,	- - -	17 00
12. Do. do. J. B. Wilson, Wisconsin,	- - -	17 00
13. Do. do. Thomas Hancock, Burlington, N. J.,	- - -	16 00
14. Do. do. Lincoln Brooks, Providence, R. I.,	- - -	16 00

All the above Pigs were dropped from the 7th to the 10th of April last.

Lot 16. One Sow in pig, 9 months old, G. G. Hubbard, Mass.,	- - -	30 00
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GREAT SALE OF PURE BRED DURHAM SHORT-HORNED CATTLE.

THE annual sale of improved Durham short-horned cattle, offered by that veteran breeder of fine stock, George Vail, Esq., of Oak Grove, near Troy, N. Y., came off June 26th. The lot offered consisted of thirty-one animals, nearly all of which showed the fine points and qualities of the high-bred Durham, and whose pedigrees were given with great care on the catalogues; besides which, two others were sold at private sale, after that accomplished auctioneer, Col. J. M. Miller of New-York, had sold those on the list, making in all thirty-three head, which sold for the sum of \$4,170, an average of over \$126 each. Eight or nine of those on the list were calves, dropped during the past spring, one of which, a heifer calf, four months old, sold for \$165.

The cattle were generally in fine condition, and reflected much credit on their owner. The cows showed evidence of deep milking properties. A number of the best of the herd had been bred by Mr. Vail from his splendid imported Bulls, Duke of Wellington and Meteor, from the stock of the late Mr. Bates of Kirkleavington, England, who stood among the very first in the rank of the great breeders of short-horns.

The company in attendance was very large, and was composed of gentlemen of New-York, as also from many of the other States, and from Canada. Some very fine animals were purchased by gentlemen from the latter named place.

The arrangements for the sale were all in the best taste; the bidding spirited and liberal.

Previous to the sale, the large party were handsomely entertained by Mr. Vail with a capital collation, got up in his usual good style on such occasions.

The distribution of so many fine animals through the country must prove highly beneficial to the community; and the friendly meeting of farmers and others from different sections of the country, with their interchange of opinions in matters of rural improvements, will be recollected with pleasure and profit.

HOW TO MAKE THE RICH RICHER AND THE POOR POORER.

ANOTHER PRESSURE FROM THE SCREW.—We announced lately the failure of a number of furnaces in Clarion and Venango counties. We also noticed the stoppage of work at several of the rolling mills in this city. We also published the report of the Board of Revenue Commissioners in relation to Alleghany county, showing the depreciation of property, and particularly in that of iron and cotton, which was officially reported at fifty per cent. of its value. We have now before us another instance of ruinous depreciation of iron property on our waters—that of the Monongahela Iron Works on Cheat river, a short distance from where that fine stream empties into the Monongahela between Brownsville and Morgantown. In 1842 this property was purchased by an enterprising firm in Baltimore—the Ellicotts—for \$80,000. Since that time they have improved the property by the building of two additional furnaces, which cost together \$32,000, and expended in other valuable improvements in all \$60,000.

It consists of 15,000 acres of land, one fifth of which is fine farming land, a large portion of which is under good cultivation—one large rolling-mill and nail factory—three large blast furnaces, costing in all \$42,000—grist-mill, saw-mill, and about 70 dwelling-houses, many of them large and valuable buildings. There is also on the place a ferry of note, which in times of prosperity and trade was of itself worth \$300 rental—and a land throughout abounding in iron ore and stone coal in exhaustless quantities, and, excepting the cleared farms, covered with heavy timber. This extensive property was brought to the hammer on Monday last, at Morgantown, Virginia, and, with all its improvements, sold by the Sheriff for \$25,750.

An event of this kind presents matter for serious reflection. It is an evidence, in the first place, of the total want of value attached to iron property—the price realized being actually less than the value in ordinary times of good trade and good markets of the land. In the second place, of the growing scarcity of money which the holders can more profitably employ in buying bonds, bills and mortgages, than investing it in iron or landed property. The first is produced by the fall of iron, consequent upon the encouragement of foreign importations under our present tariff. The second is by the exportation of the precious metals to pay for the imports thus made, not only of iron, but a vast number of articles admitted at equally low rates.

In this view of the case we would ask, Who is benefited by the course of policy productive of such results? Is it the laboring man, the farmer, the mechanic, the printer, the doctor, the preacher, the coal digger, or the boatman? Do any of these find their profit in this state of things? Under a system of protective duties such as we had under the tariff of 1842, who are they that were injured? Was it the laborer, who found under it constant employment and good wages? Was it the farmer or mechanic, who found under it fair and full prices for the product of his farm and his factory, with abundance of good money in circulation? Was it the printer, the doctor, or the schoolmaster, who found his employers and customers with sufficient and ready means to pay? Was it the preacher, who saw his congregation joyous, happy, prosperous and devout from the abundance and blessings around them? If these things are so, why is this course of a demoniacal course brought upon us to oppress and destroy us? Let the question be asked of the dominant Locofoco party in Congress.—*Pittsburg American*.

Who is it that benefits by the course of policy that leads to such results? Not the nation certainly, for we consume less iron than we did four years since, notwithstanding the enormous growth of population. Not the farmer, for his customers for food are being daily converted into rivals—producers of food instead of consumers of food. Not the planter, for the discharged workman consumes less cotton. Not the manufacturer of cotton, for he finds a daily diminishing demand for the products of his looms. Not the merchant,

for he is in daily apprehension of the crisis that must come when he shall cease to be able to negotiate loans. Not the ship-owner, for the import of men, which trebled under the tariff of 1828, and trebled again under that of 1842, would now be retrograding were it not that British free trade is rapidly destroying the agriculture of the United Kingdom, and expelling the poor people of Ireland, of Scotland, and of England. Who then is it that profits by what is called free trade? Scarcely even the speculator and the gambler, for their profit is but temporary, as may be ascertained by an inquiry into the fate of the men who have built the palaces of New-York and Philadelphia. The shrewd capitalist bides his time, and as *free trade* works out the ruin of the honest and industrious man of small means, he buys their property, and thus it is that the present commercial policy of the country—called democratic—tends to make the rich richer and the poor poorer.

THE RESOURCES OF VIRGINIA.

THE *Richmond Republican* is calling attention to the resources of Virginia. Lead is found there in abundance, and also plumbago in several places east of the Blue Ridge. Besides the immense salt regions of Kanawha, there are in southwestern Virginia inexhaustible stores of this valuable mineral. The salt water found in Washington county is stronger than that of any other county. Fossil salt, the largest, if not the only deposit of the kind discovered in the United States, is found near the salt hills above noticed, and has been bored into at least fifty or one hundred feet, and without going through it. Gypsum, or plaster of Paris, of the purest kind, exists in great abundance in connection with the fossil salt. There are many deposits of iron ore, from which refined and hammered iron can be made, which will rival the best productions of Russia and Sweden.

Of all the States of the Union, Virginia is the one that should advance most rapidly, and that would do so, were it not for her determination to pursue a policy that tends to exhaust her soil and thus compel her people to waste their capital, in accordance with the policy that Great Britain has forced upon all her colonies, and that she now, under the specious name of free trade, is endeavoring to force upon all the independent nations of the earth. It is impossible to look upon the map of the Union without being struck with the vast advantages possessed by Virginia, in regard to intercourse between the several parts of her own territory, and between her territory and that of the Western, Northwestern and Southwestern States. Her rivers furnish large portions of the State with means of intercourse with the great markets of the Union, while the depressions of the Alleghany ridge within her limits point to her territory as the natural line of communication between the valley of the Mississippi and the ocean. She abounds in coal and in iron ore, in lead and in salt. Her water powers are immense. Nature has done every thing for her, but man has done nothing but exhaust the soil furnished to him by nature, and then fly to other regions to be again in like manner exhausted; and the consequence of her refusal to make a market on the land for the products of the land is seen in the fact that she is steadily declining in consideration, as is shown by the following table of representation in Congress under the several censuses:—

		Virginia.	Penn.	New-York.	Mass.	Ohio.
1790,	-	19	13	10	14	—
1800,	-	22	18	17	17	1
1810,	-	23	23	27	20	6
1820,	-	22	26	34	13	14
1830,	-	21	28	40	12	19
1840,	-	15	24	34	10	21
1850,	-	13	25	33	11	21

How long will it be before the people of Virginia will come to see that wealth and power go always together, and that in her declining power is to be seen the surest evidence of her declining wealth, the consequence of her own suicidal policy?

RESOURCES OF MARYLAND.

WE mentioned last week the discovery of lead and plumbago, in the coal region near Frostburg. We have since seen specimens of the same minerals from a different portion of the county, near Oldtown.—*Exchange paper.*

Scarcely a day elapses that does not bring with it intelligence of new mineral discoveries, all tending to prove the ability of the country to supply itself with every thing needed for the rapid improvement of the condition of its people, and for its own advance in wealth and power; and yet, of what advantage is it? The policy of the country is adverse to the development of its resources. It refuses to make a market on the land for the products of the land. It imports coal while possessing it in quantity compared with which that possessed by Great Britain scarcely deserves to be mentioned. It imports iron and lead and copper, while possessing the means of supplying them at a lower rate than elsewhere in the world, provided only that its farmers can be taught to see that every ton of *our own* coal that is mined, every ton of *our own* iron ore and every pig of *our own* lead that is smelted, furnishes a market for *our own* raw products of the earth to the whole extent of its value, and in doing so gives a value to both labor and land; while every ton of coal, iron, or lead, that is imported produces a necessity for sending from the land its raw produce, the refuse of which is to be consumed abroad, to the depreciation of both labor and land.

A VENERABLE ORANGE TREE.

A JOURNAL giving some account of the horticultural exposition in Paris, publishes the following biography of the most venerable plant in France, an orange tree at the palace of Versailles, known formerly under the denomination of the Grand Constable:—

“Leonore de Castille, wife of Charles III., King of Navarre, having eat a *bigarade*, a sour and bitter kind of diminutive orange, which no one certainly, in these days, would wish to put to his lips, found it so good (there is no disputing tastes) that she planted in a pot, in 1421, the five pips which this fruit contained. As the orange tree was not then common in Navarre, and as, moreover, the hand by which these seeds had been confided to the earth was not that of an ordinary gardener, the five young trees became the object of particular care. They were not separated, but were cultivated at Pampe-luna, then the capital of the kingdom of Navarre, until 1499.

“At that epoch Catherine, sister of Gaston de Foix, and wife of John III., King of Navarre, sent as a present to Ann of Brittany, wife of the King of France, Louis XII., a box containing five orange trees, as a rare and precious object, at the same time indicating their origin.

“That box, with its trees, afterwards became the property of the Constable de Bourbon, who conveyed it to his château of Chantelle, in Bourbonnais, the château from which he marched into Italy in 1523 to take up arms against France. In consequence of this treason his estate was confiscated, and the duchies of Bourbonnais and Chatelleraut, which formed the appanage of the Constable, were re-united in 1531 to the crown of France. At that time Francis I. caused this orange tree to be taken from Chantelle to adorn his manor at Fontainebleau, and in the inventory of the confiscated property of the Constable figures, in a particular article, *an orange tree with five branches, brought from Pampe-luna*. This tree was catalogued at Fontainebleau under the name of the Grand Constable.

"When Louis XIV. purchased Versailles, and planted the magnificent orangery which is still so much admired, he collected the finest trees from the other royal residences. The Grand Constable was brought here in 1684, and they added to this name that of the great Bourbon, a designation which it has continued to bear to the present day. But another remarkable fact is, that in 1684 the Grand Constable was confided to the care of a gardener named Lemoine, and from that year it was cultured by Lemoines, who succeeded from father to son, until 1833, when the last of the name, having no male child, retired from the post. This last Lemoine died at Versailles in 1846. Here, then, is a tree 430 years old, which, during 150 years of its existence, has been tended by the same family."

MANUFACTURE OF COTTON.

HERE is an article from the *New-Orleans Crescent*, which we wish every capitalist and cotton planter in the South to read and think of:—

ADVANTAGE OF COTTON MANUFACTORIES.—When cotton is ten cents a pound, the charges attending its transportation to Liverpool amount to over four cents a pound. The cotton which comes back to us in the manufactured fabrics pays, first, the charges of export, a profit to the manufacturer, and all the charges attending the return. New-Orleans exports 1,000,000, which, at ten cents, would amount to \$45,000,000. The cost of transportation will more than cover all the expense of converting the raw article into yarns and the various kinds of cloth. So that if the English would spin and weave for nothing, it would be a better business for us to manufacture it at home, and pay our own people for their work. This million, worth now only \$45,000,000, if converted into yarns and coarse cottons, will be worth \$150,000,000. If it is asked how this wealth is to be retained, the answer is obvious. Divert a part of the slave labor from the field to the factory. Diminish the quantity of the raw material, and increase that of the manufactured. This will keep up the prices of both. The banks of the Mississippi are the true places for cotton mills. The supply of fuel is inexhaustible. Coal floats down to the factory by the cheapest channel in the world. Corn, flour, meat, all the comforts of life. The slaves will form the most efficient and the cheapest operatives. Thus, instead of paying away millions on the cost of freight, millions for the labor of foreign artisans and the use of foreign capital, we can save all this. If England can afford to buy our cotton, carry it across the Atlantic, manufacture it, and then reship it to this country, can we not afford to make it at home? Why should there not be a factory upon every bluff on the Mississippi?

The present system of employing slave labor in agriculture exclusively is suicidal. The factory has no overflow to fear, no late nor early frost, no drought, no caterpillar. Its crop is safe, subject to no contingencies—no casualties. It is controlled by man, independent of the elements. As an investment for security, for certainty of results, and uniformity of income, it has no superior. One of the evils to which other manufacturing establishments are subject, does not exist here. There can be no secessionists in the southern factory. A "strike" is a moral impossibility. And yet with all these advantages in favor of the labor from departments suffering from over employment, none of the Louisiana slave-owners have the energy and boldness to engage in this new and most profitable employment.

SULPHURED RAGS *v.* HARES.—I have frequently experienced the efficacy of the plan of keeping hares, &c., from barking trees, by means of rags dipped in brimstone. Persons subjected to this annoyance will not regret trying the brimstone; the experience of the last few days induces me to recommend the trial.—S.

NEW BOOKS.

Rena; or the Snow Bird. By CAROLINE LEE HERTZ, author of "Aunt Patty's Scrap Bag," "Linda," &c. &c. Philadelphia: A. Hart, late Carey & Hart.

At the present day, when we are so flooded with all kinds of trash, with catch-penny names and immoral tendency, it is refreshing to get hold of a book like *Rena*. Written in Mrs. Hertz's beautiful style, it is a book of more than common interest; and we heartily recommend it.

LECTURES ON BOTANY.*

COURSE OF LECTURES ON BOTANY IN REFERENCE TO AGRICULTURE.

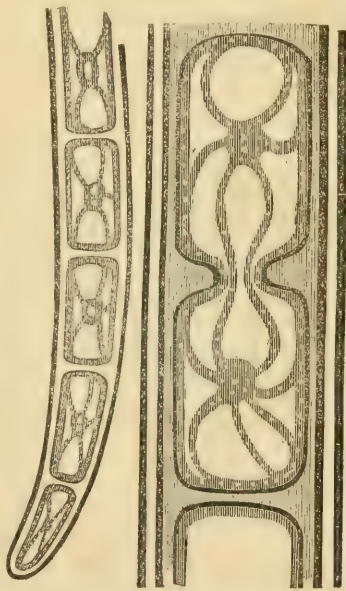
By CHARLES JOHNSON, Esq., *Professor of Botany at Guy's Hospital, &c. &c. At Messrs. Nesbitt's Agricultural and Scientific Training School, Kennington Lane, Lambeth, near London.*

LECTURE III.

THE operations by which vegetable life and development or growth are maintained, however plausibly set forth by physiologists, and perhaps correctly so in the aggregate, are still, in our present state of knowledge, for the most part incapable of positive demonstration. Their combined effects are seen in the enlargement of parts previously formed and the production of new ones. The leaf opens from the bud, attains its destined size, changes its hue, and falls; the fruit ripens and discharges its seed; the seed grows into a plant, and the same processes are renewed from year to year; but the organs that minister to them are so minute, their mutual action so complicated, that although the external and grosser machinery of life is sufficiently evident, the springs that work it are involved in mystery. The microscope is too limited in its application to effect much toward the elucidation of the phenomena of life. The child breaks his toy to find out the source of the music which his act annihilates; and in like manner the philosopher tears up the organic tissue, or at best deranges its functions, that he may apply his glasses in the vain effort to detect the origin of that which is no longer there; still something is gained by both. The child has perhaps discovered a string that produces a sound when struck, and a little wheel with spokes that might have struck it; while the philosopher has discerned a few facts of which he was previously ignorant; and, in the end, each of them "garring odds and evens meet," and "laying that and that th'gither," find themselves a degree wiser than before. The important fact of the circulation of the blood was discovered and established by a similar series of deductions; and although its passage from the arteries into the veins would be, perhaps, vainly sought by inspection of the minute extremities of those of the higher animals, in the translucent tail of a stickle-back, or the membranous foot of the frog, the diverging and returning currents are beautifully and obviously displayed. So in plants, although the movements of the sap and other juices cannot be traced in the woody tubes of the higher and more elaborately constructed orders, yet the microscope discovers in the cells of the minute and delicate hairs that grow from their surface, and in those of the

leaves and stems of certain aquatic vegetables, comparatively very low in the scale of being, fluids in constant motion, which, with their accompanying phenomena, throw much light upon the process of increase in the tissue to which they belong.

Fig. 1.



In fig. 1 is represented the termination of one of the slender, hair-like aquatic plants, called "confervæ;" which consists of little transparent cells, more or less elongated, and joined end to end like a string of beads. In each of those cells the microscope discovers currents of fluid, containing minute particles, moving in the direction of the dotted lines, and apparently circulating from one extremity of the cell to the other, and returning on the opposite side. In the center, or sometimes toward one of the ends of the cell, is a small cluster of particles, from and toward which currents pass in a radiating manner, rendering the combined movements very complicated. The little central mass, however, evidently greatly influences the rotation of the

* Continued from page 59.
VOL. IV.—8

fluid, and the result is a gradual thickening of the membrane composing the wall of the cell, and likewise an eventual separation of the mass itself, either laterally or longitudinally, into two, each becoming a separate center of motion. The currents thus disturbed, the inner coat of the cell begins to contract between them, as exhibited in the left-hand figure, dividing it into two cavities, which are afterward more or less extended by the force of their respective currents.

Although no apparent connection exists between the cavities of the contiguous cells, careful and repeated observation shows that the movements of the fluids in each influence those of their neighbors, and that a reciprocal action is maintained throughout the whole living fabric. The uniformity of direction preserved by the currents in different cells is in accordance with this latter circumstance, and is beautifully exemplified in the stems and whorled branchlets of the "characeæ," another tribe of aquatic plants, a grade or two higher in the scale of vegetable organization than the "confervæ."

Fig. 2.

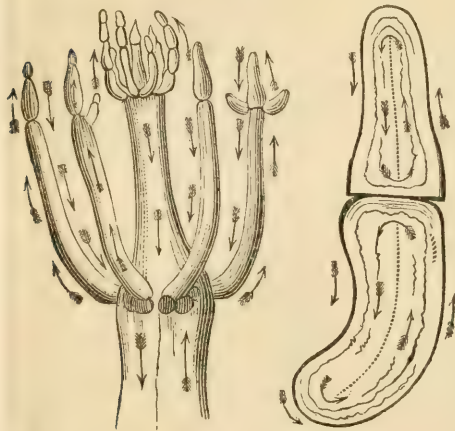


Figure 2 represents a portion of "nitella flexilis," greatly magnified, the arrows marking the course of the internal currents (more distinctly shown in the farther magnified view on the right) of the two terminating cells of one of the branchlets; from inspection of which it will be understood how a complete rotation of the fluid takes place in each cell, passing upward on one side and returning on the other, and that a similarity of movement obtains throughout each whorl of branchlets; the ascending current being toward the outside of the plant, the descending toward the inner or axial side of the whorl. These motions are more or less rapid, according to the season or the temperature under which the examination is made. In the winter time they are scarcely observable.

In what degree the flow of the sap in the higher orders may resemble these curious phenomena, we have not at present the means

of ascertaining. The different condition of the woody tubes which contain and conduct it, as compared with that of the cells we have examined, may involve considerable diversity of organic action; and it would be absurd to endeavor to deduce any general conclusions from so very partial an acquaintance with a few isolated facts; the more important and ultimate phenomena of vegetable physiology are yet as much a mystery to human speculation as is the source of life itself.

The relative distribution of the minute elementary organs described in our last Lecture varies in different plants, and, as we shall see hereafter, occasions organic distinctions of high importance to the practical as well as to the merely theoretical student. But under whatever arrangement of the vital channels and recesses the existence and development of the vegetable are maintained, the general process is probably not very dissimilar between the highest and the lowest; the most complicated and the simplest of their structures being rather modified than changed for the required adaptation. The difference be-

tween the foodful and the poisonous, in all their degrees of quantity and intensity, are produced by causes which are only secondary or subsidiary to those that regulate the action of the main-springs of vegetable life. In all the higher orders of plants the absorption of nutriment by the root is but a small, however necessary, portion of a complicated process, involving a vast amount of vital and chemical action, whose conjoined effects are witnessed in the production of those secretions that give them character or property and value in the domestic economy of Man. The first elaboration of the absorbed nutriment changes it into *sap*—a fluid possessing nearly the same general characters in all plants, though unquestionably the medium from which their most diversified products are secreted by subsequent modification of its original com-

ponent principles and (as it would appear in some instances at least) the addition of others. Leaving, however, these latter, and the sources of their derivation, to be discussed at a future period, we will now examine the structure through which the sap is conveyed, and the adaptation of the external organs traversed by its channels to the fulfillment of the changes which it is destined to undergo.

The popular notion respecting the functions of the root are very incorrect, it being generally regarded as the sole medium through which nourishment is conveyed to the plant; while, so far from such being the case, almost every other part presents more or less of an absorbing surface: not, perhaps, in constant or uniform action, but capable of so adapting itself under peculiar circumstances. Some plants, especially those of slow growth and succulent habit, will live

and increase for long and indefinite periods when deprived of root, and apart from the earth in which they naturally vegetate. A socotrine aloe has been suspended in a chamber of my dwelling-house for upward of seven years, and during that time has increased greatly in size, weight, and number of leaves; of which latter organs three or four are developed every year. It is still growing, and as healthy as one of the same kind planted in a pot and kept in a green-house, although its sole source of nutriment must be absorption from the surrounding air through the medium of its leaves. This is no isolated case, but one among many, of a plant growing without roots or perceptible cause of development, simply cited because it has been constantly under my own observation. From it we may understand how possible it is that a vegetable rooted in the soil may still derive much of its subsistence from a different source; nay, that the root may rather even be necessary to secure it a fixed habitat than for its support.

The mode in which the root acts where its assimilating functions are required, and the laws of its development, are circumstances in general little appreciated by those whose daily pursuits are intimately connected with this part of the vegetable economy. The capability of imbibing from the soil seems to be chiefly confined to the extreme ends of the fibres, and hence arises the drooping of plants when they are shifted from one spot to another. How carefully soever the transplantation may be made, the absorbing extremities are broken off in consequence of their adhesion to the soil; or, otherwise, exposure to the dry atmosphere contracts their tender tissue, and renders it for a time, even when replaced in the moist earth, incapable of drawing the necessary supplies.

A section or slice of one of the fibres above alluded to, viewed under the microscope, shows it to consist of a coating of very lax and distended cellular tissue, including a central column of woody tubes and ducts, the outer portion of the tissue having its cells generally much more compressed than those of the interior, somewhat in the manner represented in one of the figures of cellular tissue portrayed in the last Lecture; but the extreme points of the root-fibres never exhibit such contraction of the external vesicles, which appears to take place gradually, as the result of age and the occasional defalcation of moisture in the soil; to compensate for which change the fibres are continually extending in length during the growth of the plant, and thus perpetually present a newly-formed surface of cellular tissue for the absorption of the stimulating and necessary moisture. These extremities are generally thicker than the part of the fibre immediately above them; and, being of a soft, sponge-like texture on the outside, have received the name of "spongioles." It is by not attending to the preservation of the spongioles, or rather from the total ignorance of many practical gardeners

and foresters in regard to their existence, that so many trees and shrubs are killed by being transplanted. The spongiole is the growing point as well as the organ of absorption; and, owing to the little care taken in removing the plant, or rather in consequence of the utter carelessness with which it is wrenched from the imperfectly loosened soil, by far the greater number of these little, but important, parts are broken off and left in the ground. Hence probably—nay, we might say certainly—the reason why large trees cannot be successfully transplanted. Growing vigorously, such a tree quickly absorbs all the nutritive matter from the soil in its immediate vicinity, and extends its roots from time to time deeper or more widely distant, to seek the required supply else where, until the growing points of their intricate ramifications are too far removed from the site of its trunk to be preserved during the process of shifting. Obvious, however, as are the absorbent functions of the root, as exemplified by these phenomena, no one who has closely studied the varied structure and physiology of vegetables, and marked the diversified habits and modes of growth that often characterize individuals belonging even to the same natural family, will maintain the popular opinion of its being the universal source of aliment. Among those plants whose vital action cannot be supported without it, even but for a short period, there are various grades in the essentiality of its action as an absorbent organ. This is especially evinced by the different situations in which they vegetate, or are capable of vegetating.

It is not intended by any of the foregoing remarks to deny the important agency of the organ under consideration, but only to direct attention to the fact that such agency may be suspended under peculiar circumstances in certain plants; which, still continuing to live and grow, prove that other organs of assimilation exist, and, existing, are more or less concerned in the maintenance of vegetable life. The most essential of these latter are the leaves, of which only a very small number among the higher orders of plants are destitute; and even these tend by their peculiarity of habit to throw a valuable light on their physiological influence.

In regard to the actual functions of the leaves, opinion has been much divided, but they are now very generally considered to be the lungs or breathing organs of the plant; at the same time it is probable that this function is associated with some others, either uniformly acting or dependent on the influence of external circumstances, as the presence or absence of solar light, the condition or changes of the atmosphere, &c.; and, likewise, that in many instances no inconsiderable proportion of substance is conveyed into the growing plant through their medium.

The anatomical structure of a leaf, and the connection which exists between it and the vessels or veins of the wood and inner surface of the bark, are all calculated to maintain the

important function of respiration—a function upon which seem primarily to depend those modifications of the sap that are essential to the production of the secretions that give so great a diversity of character to different vegetables, and render them available to the various purposes of human economy. Considerable analogy, too, unquestionably exists between the breathing apparatus of plants and animals. In the higher orders of the latter the lungs are almost wholly composed of the ramifications of the bronchial tubes or branchings of the windpipe, and two sets of blood-vessels, called the pulmonary veins and arteries—the ultimate divisions of the three being so minute and intricately blended as almost to baffle the researches of the anatomist, even though assisted by the highest powers of the microscope. The delicate extremities of the air-tubes terminate each in a little rounded cell, over the walls of which branch the almost inconceivably minute extremities of the arteries and veins—the blood circulating in which is thus brought into close contact with the air drawn into the lungs at each inspiration.

It would be foreign to our subject to enter into description or discussion of the physiological phenomena connected with this function in the animal, but it is one apparently essential to all organic beings, however it may be modified in their several grades to accord with their greater or lesser complexity of structure, and their diversified habits and modes of existence. Let us now examine the leaves, and endeavor to ascertain how far the received opinions concerning their respiratory functions are capable of being substantiated by fact.

Viewed apart from the plant on which it grows, the leaf is a very curious and complex structure. A frame of fibre branching from the top of its stalk, or, where the stalk is wanting, from the base of the leaf itself, forming a kind of net-work, the interstices of which are fitted up with a green, soft substance, the whole inclosed within a thin skin or membrane, is all perhaps that the unassisted eye is capable of detecting; but the fibrous frame-work, when magnified, is discovered to consist of the woody and spiral tubes already described, compactly bound together at the lower part, and gradually separating from each other in the form of veins as they extend toward the margins and extremity. The green, pulpy matter occupying the intervals between their ramifications consists of cellular tissue, filled with green particles—its little cells not contiguous throughout, but leaving small open spaces here and there; while the skin-like covering of the leaf (*epidermis*) consists of a layer of small compressed cells, apparently empty or only filled with air, colorless and transparent, so as to admit of the colored veins and green tissue of the interior being visible through them. The skin or *epidermis* varies in texture in the leaves of different plants: as does, likewise,

frequently that of the upper and under surfaces of the same leaf. The size and arrangement of the cellules of which it is composed are often very irregular. It possesses considerable rigidity and toughness in some plants, and in all serves to protect the more delicate tissue beneath from external injury. In the greater number of vegetables its continuity is interrupted by pores or openings, technically denominated “stomata,” which occur in some cases only on the under surface of the leaf, in others on both sides, and are more or less numerous. Thus, in the leaf of the common lilac, which has none on the upper face, 160,000 have been counted on one square inch of the lower; while in that of the carnation, within the same space, there are 38,500 on each side. The stomates are not mere perforations in the epidermis, but spaces, generally of an oval form, in the middle of which is a slit that opens or closes according to the condition of the atmosphere, or other circumstances affecting the state of the growing plant. The oval border consists, in most instances, of two oblong parallel cells, capable of contracting, so as to become somewhat kidney-shaped, thus opening the stomata; which, so long as they remain straight, are closed.

Fig. 3.

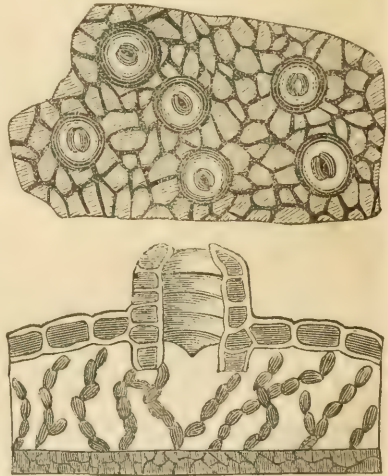


Figure 3 represents a portion of the cuticle of the elk's-horn fern (*acrostichum alciacorne*) highly magnified, with several of its stomata; and at *b* is a vertical section of one of them, showing the vacant spaces into which it opens in the substance of the leaf.

Between these stomates and the spiracles or breathing-pores of some of the lower orders of animals, considerable resemblance unquestionably exists; and numerous experiments (of which our space will not admit any detail) have confirmed the opinions entertained by physiologists concerning their corresponding functions.

It may be difficult for one who has no farther acquaintance with the act of respiration than that derived from his own experience, or from the casual observation of the mode in which it is performed in the few animals of the higher grade with which he is accustomed to associate more or less in the ordinary occupations of his existence, to conceive that such an act can take place otherwise than through the medium of mouth and nostrils; but internal structure is as variable as external form, and involves conditions of life far more diversified than is generally understood. The earth-worm, the spider, the bee and the butterfly are equally dependent upon an alternate inhalation and expiration of the air they move in, as are the man, the quadruped, and the bird; but the process is maintained in a very different manner. The mouth in the former is the vehicle through which food is conveyed into the stomach; but they have no nostrils, and breathing takes place through channels in distant parts of the body. Thus, in the insect, a line of pores is observable on each side of the body, varying in number, but frequently as many as eighteen or twenty, and in certain kinds even many more. They are very evident to the naked eye in many of the larger caterpillars, but in the smaller insects require the assistance of a good magnifying-glass or microscope to discover them. Their position is shown on one of the common cabbage-caterpillars in figure 4. A feather,

Fig. 4.



or a camel's-hair pencil, dipped in oil, and drawn over these two lines of spiracles or pores, kills the insect by suffocation; and if a leaf be rubbed over with oil or varnish, so as to close its stomates, it dies. Hence, indeed, one principal cause why certain plants will not flourish under the shade of trees, while others are not affected by it. In almost all of the latter class that I have examined, the stomates are either wholly wanting on the upper surface of the leaf, or they are comparatively very few in number. Where the stomates are numerous on the upper side, they may become choked by the heavy dripping from the leaves of the tree in wet weather; and, evaporation being checked by its shade, a similar effect is liable to be produced to

that arising from the coat of oil or varnish; and I am inclined to believe that this operates as injuriously, or even more so than the obstruction of light, and other causes to which the evil is more generally attributed.

To enable you to appreciate to the desired extent the analogy existing between the respiration of vegetables and animals, a farther examination of the structure of the leaf will be necessary. By maceration, or soaking in water for a few weeks, the decomposition of the softer, cellular portion of the leaf is effected, the skin readily separates, and the pulpy portion occupying the interstices of the veins may be removed by careful washing, leaving the latter entire—they being, in consequence of the greater strength and rigidity of their texture, less liable to decay than the other parts. In this manner the beautiful preparations commonly called the *skeletons* of leaves are obtained; and if the maceration be continued a little longer, the net-work of veins (at first sight apparently simple or consisting of a single series only) divides into two, precisely corresponding with each other, as shown in figure 5. [See next page.]

This curious structure is perhaps more readily ascertainable in the leaf of the common holly than in any other well-known plant, the two sets of veins being less firmly attached than in leaves of thinner substance; but examples of their partial separation may be met with in most damp woods in the spring, among

the strata of dead and decaying leaves that then cover the ground. Now, by cutting the stalk of any leaf transversely, and examining the section with a magnifying-glass, you may discern the origin of these veins in two or more masses of fibre; and by carefully cutting through the leaf-stalk, and the stem or branch on which it grows, lengthwise, you may, with the assistance of your glass, trace the connection of one portion of the fibre—namely, that which branches out into the upper network of veins—with the woody sheath that encompasses the pith: the other portion, the origin of the lower net-work, passes downward into the “*liber*,” or inner substance

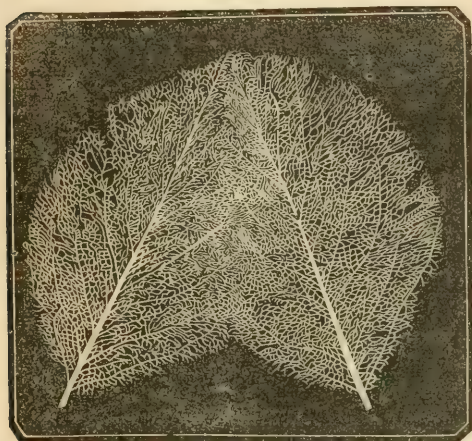
of the bark.

This disposition is precisely accordant with the supposed functions of the leaf as an organ of respiration. The sap rises through the woody tubes that surround the pith, forming what is technically called the medullary sheath; and these tubes, branching out into the delicate veins of the upper surface of the leaf, expose it to the action of the air admitted through the medium of the stomates into the internal cavities before described. Whatever may be the nature of this action, which is probably chemical, the properties of the sap are altogether changed by it. From a fluid of comparatively simple character it becomes the depository, in different vegetables, of various proximate principles, of the most com-

plex combinations and energetic qualities; all, indeed, that is hurtful as poison, useful as medicine, valuable in the arts, applicable as food, or otherwise capable of being rendered subservient to human economy, is more or

by plants possessing numerous stomata, some physiologists of the present day seem inclined to deny the instrumentality of the latter in the admission of air to the interior substance of the leaf; regarding them only as organs of excretion, like the pores of the animal skin.

Fig. 5.



less dependent upon this elaboration of the sap. There are differences of opinion, as previously stated, as to the mode of vital action and the ultimate organization by which these results are effected. Even the theory of vegetable respiration, once considered to be established beyond the possibility of doubt, and supported by numberless experiments apparently the most conclusive, is no longer a settled point in physiology. Some very nice distinctions have been made between the process in question and that of digestion, to which the leaves are likewise subservient; but neither of these operations are sufficiently obvious in the experiments hitherto performed on growing plants to enable us to separate them. By whatever name we designate the source of these modifications of the vegetable juices, and whether we regard it as a simple or a binary process, it is accompanied by a large amount of exhalation. A common sunflower, three feet high, is found to exhale one pound and a quarter of fluid, chiefly water, every day; and the common cabbage nearly as much. This exhalation is ascertained to be chiefly through the medium of the leaves; and, considering their corresponding functions, is analogous to the watery exhalation that accompanies the action of the lungs in animals. That the stomata are concerned in the disposal of this superfluous moisture seems to be very evident, as in succulent plants, and others growing in situations subject to long-continued drouth, these openings are generally very sparingly distributed, while they are most numerous in those that derive large supplies of water from the soil in which they naturally vegetate. Led away by this fact, and contemplating the vast quantity of water exhaled

The reciprocal action of the spiral vessels is no less a subject of dispute than that of the stomata, and on a similar one-sided view of their structure and situation; although no authenticated instances can be adduced of their containing, at any period after their first development in the tissue of the plant, anything but air; and they are for the most part only traceable in those portions upon which these curiously adapted openings exist—so uncertain is our actual knowledge of the phenomena of vegetable growth, and of the vital functions which they indicate! In fact, there is scarcely any branch of physical science so little understood as that of Vegetable Physiology.

By examining the interior of the human body after death, and comparing the relative situations of its various organs with the functions and sensations of the living, we are enabled to decide with a tolerable degree of certainty upon their real agency in the system; and, on dissecting other animals and finding organs in similar situations and bearing similar relations to each other with those of the human body, we are justified in drawing our inferences accordingly. And in this manner, descending from one to another through the various grades of the animal kingdom, we have arrived at a comparatively correct estimation of the grosser elements of their existence; but the organization of vegetables is so perfectly distinct from our own and that of all the higher classes of animals, that it is impossible to draw any correct conclusions by mere comparison. We can, indeed, trace the gradual growth and development of their parts, and observe the loss of vigor and the debility which precedes decay, and from other concomitant circumstances consider them as exceptions to the inertia of matter; in other words, as being endowed with that hitherto incomprehensible principle, *life*. We can proceed a few steps farther by dissection, and, discovering a system of vessels traversing the plant throughout its whole substance, are led to conclude that life here, as in animals, is dependent upon a continually repeated elaboration and modification of the fluids they contain; nay, the microscope shows us those fluids in motion, and almost in the act of depositing the petty molecules that contribute to the growth of the tissue. There we stop. Comparison fails to assist our researches any farther; and experiment, often founded on the uncertain basis of bare conjecture, is our only guide beyond.

SUPERPHOSPHATE OF LIME.

USE OF SUPERPHOSPHATE OF LIME, PRODUCED WITH ACID AND BONES FOR MANURE.

BY W. C. SPOONER.

[Prize Essay of the Royal Agricultural Society.]

THE difficulties under which the pursuit of Agriculture has for some years labored—the importance, and, indeed, the absolute necessity of raising the largest crops of roots at the least possible expense, afford ample reasons for the Council of the Royal Agricultural Society of England proposing as a subject suitable for a prize essay, “The Use of Bones with Acid,” which on high authority has been designated “the most important saving which was ever held out in the use of manure.” If any additional reason were required why the utmost attention should be devoted to this important matter, and the most extended information gained respecting it, it may be found in the fact that while the constantly increasing population of this country demands a corresponding augmentation of animal and vegetable food, the sources of supply both of bones and guano are likely to become greatly diminished. Thus, not only as it affects the interest of the occupier and owner of the soil, but also on national grounds, is the subject of our essay worthy of the deepest consideration. The superior economy of employing bones mixed with an acid, over that of using bones alone, is no longer a hypothetical or even a probable statement, but an established fact; and though I shall have to offer some results in corroboration, yet I do not hold them as essential to the subject, so fully has the success of the mixture been established from the numerous experiments related in the Journal of the Royal Agricultural Society, and more particularly in the excellent and elaborate essays of Mr. Hannam. And though I shall find it necessary to pass rapidly over all the various branches of the subject, yet my claims for honorary notice will principally rest on affording such practical information on points hitherto but briefly attended to, as may, I hope, render this essay of really practical and pecuniary value to agriculturists in general.

The specific effect of bone as food for the turnip crop has long been known—long, indeed, before science was in a position to explain the cause of its peculiar effects, or to assign correctly to what portion of its constituents the benefits are chiefly due.

It was found, greatly to the surprise of many, that burnt bones, in which of course the organic parts had been destroyed, were equal, if not superior, in their effect to bones

not so treated; and that when boiled, in which state the fat had been expelled, they were more productive than bones in a fresh state. It was thence supposed by those who jumped to conclusions too hastily, that the substances thus expelled were useless at any rate for the turnip crop, and they were apparently supported by the theory of a very eminent chemist, who, if we mistake not, laid it down as his opinion that the value of manures depended principally, if not entirely, on their inorganic ingredients—a doctrine altogether at variance with the previous generally received notions, that ammonia was the true fertilizing element, and that its amount afforded the measure of the value of manure.

In medio tutissimus ibis—the truth, we take it, will be found to lie between the two extremes. We may justly regard the inorganic constituents as being the most important and essential portion of manure, affording to the plant what the skeleton does to the animal, the basis of support; and, as plants can obtain no other supply but through the soil, we may justly regard them as the most essential constituents.

The other elements are, to a great extent, supplied through the atmosphere, and even nitrogen and its combinations may thus be furnished. The avenues through which this atmospheric supply is furnished are the leaves of the plant, and their size affords a correct criterion, *ceteris paribus*, of the amount of nutriment derived from the aerial source. Thus beans and other pulse obtain more food from the atmosphere than cereal plants; roots more than the former; and wheat, from the small size of the leaves, less than any. Thus only can we account for the striking fact that if we give a good supply of inorganic elements *only* to the turnip crop, we shall very probably have a plentiful crop, while if these be absent, however rich the manure may otherwise be, the crop will be a failure. Not that we must therefore draw the conclusion that the organic manures are of little or no importance to root crops: they are of value, and particularly to the grain crops which succeed.

The organic matter which composes about one-third the substance of bones is, however, so intimately combined with the earthy portion, and their disunion is accomplished with such difficulty, that the good effects of either

are to a certain extent neutralized, at least so far as the first crop is considered; and we are consequently obliged to supply five or six times as much as the crop actually requires, and to render them available by means of pulverization. It is on this principle that the assistance of sulphuric acid is sought for and obtained: it serves by its chemical affinities to separate the component parts of the bones, and render them more soluble and available as food for plants. In the excellent and accurate experiments of Mr. Hannam, related in a former number of the Journal, it was clearly proved that fresh bones when ground were superior to boiled ones, from which the fat was extracted; and the latter were superior to burnt bones, from which the gelatine was also removed. This result was, however, far more striking when the bones were dissolved in sulphuric acid, a difference of nearly two tons of turnips being observed, while with the bones merely ground a difference of 17 cwt. only was exhibited. From the same experiment we likewise learn that the beneficial effects derived from the earthy part of bones are $4\frac{1}{2}$ times greater than that derived from the organic parts. I refer to the Journal for the particulars of these experiments, and to the previous number for other statements, from which, if we had no other evidence, we should be justified in drawing the conclusion that 20s. laid out in bones and acid will go much farther than 40s. expended in bones alone, so far as the turnip crop is concerned.*

These experiments, however, appear to have been made with the addition of a very considerable quantity of water, so as to apply the manure to the land in a liquid state, which, without denying its superiority, is yet attended with such difficulty, trouble, and inconvenience, that it is vain to expect that farmers generally would incur it. The expense of a proper cart for the application of this manure in a liquid state is very considerable, and sufficient to prevent its general adoption. And, although it was in this form that the public were first made acquainted with its valuable properties, yet its general adoption must be attributed to the additional discovery that it can readily be applied in the state of compost by means of the common drill. Having directed my attention to the preparation and employment of this valuable manure in the form of compost, I am in a position to state that by its means one-half the usual expense in the purchase of bones may be saved.

We cannot, however, do better than take as our text, or rather the heads of our subject, the points to which the attention of competitors are drawn by the Council of the

Royal Agricultural Society of England, which are—

1. State of Bones.
2. Proportion of acid in a given weight of bones.
3. Proportion of water, if any, mixed with the acid.
4. Mode of mixing the bones with the acid and of preparing the compost.
5. Effect of various quantities applied in combination or comparison with common bones and other known manures.

1. First, then, the state of the bones—with regard to which I have merely to observe that they should be as fine as possible, but the ordinary state of bone-dust will answer the purpose very well. The dust is decidedly preferable to half-inch bones, for, while the increased weight of the former will compensate for its greater price, the points of contact being greatly increased by subdivision, the bones are more rapidly and more perfectly acted on by the acid, and require, in fact, a less quantity both of that and of water.

We next come to the second and more important point.

2. The proportion of sulphuric or muriatic acid to a given weight of bones.

Sulphuric acid is preferable to muriatic acid for several reasons: it is stronger, cheaper, has greater specific gravity, and contains much less water. On mixing it with water, a much higher temperature is attained, which conduces to the dissolving process, particularly of the organic portion of the bones. In addition to these reasons, we find that in the trials which have been made, muriatic acid has been found somewhat inferior. I have, however, been rather surprised that there should not have been a more decided difference than proved to be the case in Mr. Hannam's experiments; and we can only account for this by bearing in mind that the lowest proportion of muriatic acid employed was one-half, which was perhaps sufficient to affect all the phosphate of lime contained in the bones, whereas, if one-third had been employed, as was tried with the sulphuric acid, the result might not have been so favorable for the muriatic acid. Besides this, probably the muriate of lime formed by the muriatic acid is more fertilizing and soluble than sulphate of lime formed by the sulphuric acid; and, from its great attraction for moisture, particularly advantageous in such a dry season as that of 1844. It is, therefore, by no means improbable that an equal quantity of bones prepared separately with the two acids, and afterward mixed together, might be more productive than bones prepared with either acid alone.

The proportion of sulphuric acid most desirable to employ is a very important point, inasmuch as it has been shown that sulphuric acid alone, or mixed with water, possesses very little fertilizing powers. This, probably, is owing to the circumstance of the soil generally containing a sufficiency of this element,

* May we not expect something like the same result when applied to other plants of large leaves—as Indian corn, and tobacco, and clover? We should be glad to attract to this subject the attention of friend Hollowel, or Mr. Teschemacher. [*Ed. F. Lib.*]

and to the fact that phosphoric acid is so extremely essential, particularly in the early stages of the growth of the plant, that it will not prosper without it, whatever we may otherwise employ as manure. A neighboring agriculturist during the last year tried to raise a crop of turnips with a good dressing of salt and soot, which contain no phosphoric acid, though plenty of ammonia and other fertilizing ingredients, but the result was a total failure. In a garden experiment, I may here observe, I found sulphuric acid and water succeed as well as bones in raising turnips, but the soil no doubt contained phosphoric acid, as well as alkalies, on which the acid could act favorably.

Before we authoritatively pronounce on the quantity of acid necessary to be mixed with the bones, it will be better to inquire into the nature and properties of the substances we propose mixing together.

Sulphuric acid, or oil of vitriol, as it is more frequently termed, consists of the union of two parts by weight of sulphur with three of oxygen gas, and its strength depends on its purity and freedom from water, for which it has a remarkable affinity, so much so that if exposed to the air it will quickly absorb water from the atmosphere. Its relative weakness, therefore, is owing to the quantity of water mixed with it. In speaking of sulphuric acid, I must be understood to mean in its concentrated state, possessing a specific gravity of from 1.845 to 1.850. And it should be borne in mind, in purchasing the acid, that 50 lbs. of the above is at least equal to 60 lbs. of the specific gravity of 1.714, and therefore if the weaker acid is used, its quantity must be increased in proportion to the diminution of its strength.

On applying the vitriolized bone to the tongue, we find that it tastes both sour and sweet. The sourness arises probably from the phosphoric acid, and the sweetness from the gelatine sugar, which is formed by the action of the acid on the gelatine, converting a substance very difficult of decomposition into one readily soluble, and which can be easily absorbed by plants. When concentrated acid is mixed with a quarter of its weight of water, the temperature of the mixture is raised to 300°, and boils away at a great rate. The action of this heat on the animal part of the bones renders it of a dark color; but if a small quantity of acid only be employed, the mixture is white, from the carbonate of lime which then predominates. From an average taken from several analyses of bones of man and various animals, the following appears to be tolerably near the mean:

Organic matter, consisting of gelatine, cartilage, and fat	34
Phosphates of lime and magnesia	59
Carbonate of lime	7
Total	100

Or, in rough numbers, the organic matter may be regarded as forming one-third and

the earthy portions two-thirds. Of course, if the bones are very fresh, the former will be in larger proportion than one-third; thus Mr. Hannam gives it as 45 per cent. The above, however, may be considered as a fair average in the state usually employed by farmers.

Four bushels of bones, which may be considered to be a fair allowance for an acre, will weigh, in a fine state of bone-dust, about 180 lbs.* This quantity contains 12½ lbs. of carbonate of lime, consisting of carbonic acid 5½ parts, and lime 7 parts, which will require 10 lbs. of sulphuric acid to convert it into sulphate of lime or gypsum. This is the first result of the mixture, and is the cause of the very unpleasant fumes which are given off, and which consist in fact principally of carbonic acid disengaged from the carbonate of lime in consequence of the superior affinity which lime has for sulphuric acid. This result takes place before the acid acts on the phosphates of the bones, and thus it is that when a small quantity of acid has been sprinkled over bone-dust, the good effect has been but moderate, the carbonate of lime alone has been acted on, and the phosphate of lime has remained undecomposed.

The quantity of phosphate of lime existing in the 4 bushels of bones is about 106 lbs., containing 47 lbs. of lime and 59 lbs. of phosphoric acid. If we consider superphosphate of lime to contain a double portion of acid—a fact, however, not quite decided—then 33 lbs. of sulphuric acid will be required, which by uniting with half the lime, or 23½ lbs., forms gypsum, and leaves the other moiety of lime united with a double portion of phosphoric acid in the state of a superphosphate. Thus, 43 lbs. of acid will be required to effect these changes, leaving any additional quantity for other purposes.†

Phosphate of lime is a substance very difficult of solution, and thus in a very dry season the effects of bones are often very slight and imperfect. Superphosphate of lime, on the other hand, is extremely soluble, so much so that the vitriolized bones can be entirely dissolved or suspended in water, and thus applied. This at once explains the cause of the valuable properties of the preparation. The bones in their natural state are extremely indigestible: the acid cooks them—converts them into a species of soup which can readily be eaten and digested by the young turnips. The adamantine fetters with which the various elements composing bones are bound so compactly together, are, by means of this new agent burst asunder—the compact is broken, and each constituent element is left to pursue its own course and to exercise its

* I find that the average weight of bone-dust, as it comes from the mill, is 168 lbs. per 4 bushels, although I have found it reach the weight stated in the text. [Aut.

† I do not mean to say that these are the precise changes which take place, but only an approximation to them. Probably some portion of phosphoric acid may be left in a free state in the prepared mixture.

own natural affinities. The chemical changes which take place between the sulphuric acid and the organic portion of the bones are, no doubt, very complicated. Sugar is one result, and probably sulphate of ammonia is another; but I cannot venture to state what quantity of sulphuric acid may be necessary to effect these changes. If we presume that one-third is the proportion of sulphuric acid employed, then there will remain 17 lbs. to act on the organic portion of the 4 bushels of bones—the remainder having been required by the earthy portion.

We find that manufacturing chemists, in the preparation of phosphorus from bones (now largely required for lucifer matches), first destroy the organic part of the bones by means of fire, and then mix the remainder with half its weight of sulphuric acid. Thus, if we suppose 180 lbs. to be the quantity employed, by burning it will be reduced to 120 lbs., requiring 60 lbs. of acid to form superphosphate, which would be one-third the weight of the bones previous to burning. I suppose, however, that in this case an excess of acid is required to render the process complete, as one-half would otherwise appear to be more than the quantity demanded.

From these and other reasons we may justly consider that the proportion of acid to the bones should never be less than one-third nor more than one-half. The former, I think, is the most economical, but probably the precise quantity most desirable will be 42 per cent. of acid. I may, however, observe that in an experiment during the last season, in which one portion of the land was manured with bones and acid in different proportions, that which had more bones and less acid proved to be a somewhat better crop than where fewer bones and more acid were used; the expense being the same in both instances.

3. The proportion of water to be mixed with the acid will next receive our attention.

When one part by weight of water is mixed with four of acid, the temperature is raised to 300° Fahr. It is, therefore, very desirable that sufficient water should be used to produce this great heat, which facilitates the dissolving process; and the quantity above stated, or, if more convenient, the same measure of water as of acid, which will be rather more than half the weight, will be a very good proportion. More should not be used, as no useful purpose will be accomplished. In an experiment tried last year with different proportions of water, I could not detect any difference in the result. The water should be applied first by means of a watering-pot, so that it may be intimately combined with every portion of the bones. This is an important point, and greatly facilitates the dissolving process, which without it is very likely to be imperfectly accomplished.

Another reason for applying the water first is, that the bones becoming partially saturated, the acid, from its great affinity for it, rushes as it were into the pores of the bones in search

of the water, and thus the bones become more rapidly and perfectly mixed with and acted on by the acid. When no water is employed, and the bones are not entirely in the state of fine dust, as they never are unless purposely sifted, the surfaces of the small pieces of bone become acted on by the acid, and a coat forms around them which seals up the interstices of the bones, and prevents the acid from penetrating. I have no doubt this is often the case likewise from careless or imperfect mixture, and the good effects of the manure are thus materially diminished.

4. Mode of mixing the bones with the acid, and of preparing the compost.

It has been recommended that a large heap of ashes or mould should be made with a hole or depression on the top, in which the bones are to be placed, the acid poured over them, and after some time the whole shoveled up and mixed together. Now, if we examine into the effects of this mode of procedure, we shall readily perceive the objection to which it is subject. The ashes, no doubt, contain a considerable portion of carbonate of lime, besides other salts, for which sulphuric acid has a very strong affinity. Thus the bones are robbed of a large proportion of the acid, of which they ought to have exclusive possession. And even if common mould is used, or any other substance which has no particular chemical affinity for the acid, still this mould will mechanically absorb much of the acid, and thus deprive the bones of it.* I hold it, therefore, as a point of much importance that the whole of the acid should be directly applied to the bones, and that no other substance should be allowed to intercept or abstract their mutual affinities.

A very convenient and cheap vessel for manufacturing the mixture is a sugar hogshead, having its hole stopped with plaster of Paris. It is very desirable to avoid if possible any measuring or weighing of the acid, as it is so very dangerous a substance to handle. Many serious accidents occurred to my knowledge during the last year, and it is very difficult to impress farm servants with a sufficient degree of caution, or even to convince them that a liquid which appears so colorless will burn their skin and clothes. In emptying a carboy of acid even into a tub it is difficult to prevent a little slopping about and damaging the clothes of the attendants, as well as the basket, &c., which contains the carboy. To prevent these unpleasant consequences I have adopted the following plan: The carboy is placed on a stage or cask the same height as the sugar hogshead, into which is put the precise quantity of bone-dust we intend mixing with the carboy of acid. The water is now added with a watering-pot hav

* I have not found that any considerable quantity of the acid passes through the bones into the heap of ashes or earth; and though Mr. Spooner's is the better plan, where his apparatus can be easily procured, I still think that the expedient I mentioned may be found sometimes convenient. [*Ph. Pusey*]

ing a rose at the end, so as to disperse it thoroughly, and the carboy of acid is then emptied by means of a siphon. This siphon is formed of a piece of block-tin pipe, which can be bent into any form, about $\frac{3}{4}$ of an inch in caliber, and 4 feet in length. A brass cock is soldered to the long end of the siphon, on which the rose of a watering-pot may be placed. The siphon is now filled with water, and its long end closed with the cock, and the small end with the hand or finger. The latter is then quickly inserted into the mouth of the carboy, the cock turned on, and the acid will continue to flow till the vessel is nearly empty, without any assistance, so that the attendant has no occasion to expose himself to the injuries and offensive fumes which almost immediately begin to escape. He may, however, approach the windward side of the tub, and give the mixture a little stirring, which should be continued for some little time afterward, so that the mixture may be complete. A convenient utensil for this purpose is a fork with two grains, long in the grain, bent at some distance from the grains nearly at right angles, and fixed in a wooden handle. On the same day a fresh lot of bones may be added, and the process repeated until the hogshead is nearly full. In two days afterward the mixture may be shoveled into a heap, and either remain till wanted or mixed at once with a certain portion of ashes. It should be shoveled over several times and ashes added at each time of turning, which will thus render the mixture fine and dry enough to pass through an ordinary drill.

It must be evident that much of the value and economy of the manure depends on its being perfectly mixed, so that every particle of bone should be exposed to the action of the acid. In many cases I have no doubt this has not been sufficiently attended to, and the result has been either that more acid has been used than is really required, or that much of the advantageous effects has been lost.

By the method which I have here recommended, and which I have adopted after many trials, the mixture can be readily and accurately manufactured, and with perfect safety to the attendants.*

5. Effect of various quantities applied in combination or comparison with common bones and other known manures.

My own experience of the advantages of sulphated bones commenced in the very dry summer of 1844. Wishing to try their effects, and thinking that it was highly desirable to apply them as a compost by means of the drill (though I had not heard of any instances in which they had been so used), I resolved to make the attempt. I intended to apply

the bones at the rate of $3\frac{1}{2}$ bushels per acre, and half their weight of acid: but from not making sufficient allowance for the dampness of the manure, it extended over a large portion of land, so that little more than 2 bushels per acre were used with about 16 bushels of ashes. On the same day (in the early part of July) other portions of the field were drilled with bone-dust at the rate of 16 bushels per acre, and some parts with South American guano. The bones and acid Swedes were the first to appear, and their tops grew most luxuriantly. The turnips suffered from not being hoed till they were too forward, but the crop throughout the field (considering the late period of their being drilled, and other unfavorable circumstances) was a very fair one, about 14 tons to the acre. The bones and acid portion was fully equal to the rest, and indeed somewhat better than where 16 bushels of bones had been applied to the acre.

Every alternate ridge was carted off, and the remaining half fed off by old ewes with no other food, with the exception of a little inferior hay. The field was then sown with dredge (a mixture of beans, barley and peas), and the crop was a very excellent one; that where the vitriolized bones had been used was at the least fully equal to any portion of the field, and indeed somewhat superior to that dressed with bones alone. Thus it will be seen that the manure answers perfectly well so far as the second crop is concerned; and there is now the prospect of a good clover crop.

The result of the preceding year having fully satisfied me as to the value and economy of vitriolized bones, I did not think it necessary to test their merits against other manures during the last season, particularly as other equally successful experiments had been tried and published.

But, wishing to ascertain the most economical proportion of acid to be employed, I prepared two lots for a field of 6 acres. In one the bone-dust was at the rate of 4 bushels to the acre, and the acid one-third: and in the other the acid was half the weight of the bones, but the latter was diminished so as to reduce the cost of both lots to the same sum. The mixture in each instance extended over half an acre more than was intended, and was mixed with equal portions of ashes, viz. about 20 bushels to the acre.

The Swedes came up well, and, though attacked by the fly, soon got out of its way, and proved a very good crop. The average of the field, however, was very much reduced by the great quantity of hedge-row timber by which it was surrounded, and which spread its blighting influence a considerable distance. However much these trees might add to the beauty of the landscape, they certainly destroyed most effectually the beauty and uniformity of the turnip crop, and reduced the average of the field several tons per acre. A good portion of the field appeared to average

* In manufacturing a considerable quantity of the mixture to meet a large demand for the present season (1846), I have found much advantage from constructing various utensils of different shapes, so as to perfect the mixture without inconvenience to the attendants, as well as from other improvements in the manipulative process. [Aut.]

about 22 tons per acre, and the half where the larger quantity of bone-dust with one-third its weight of acid was used, proved superior to the other, though whether to be attributed to the difference in the manure, or to the fact of that part of the field being somewhat drier, it is difficult to say.

The field was a clay loam on the London clay, and was partially drained.

I also supplied various agriculturists in my neighborhood with vitriolized bones, prepared in the proportion of 4 bushels (180 lbs.) of bone-dust, and 60 lbs. of concentrated sulphuric acid, which I recommended to be applied to an acre when no other manure was employed. The result in nearly every instance has been decidedly favorable.

Mr. W. Gater, of Westend, employed it at the rate of 2 bushels of bones to the acre, in addition to a fair dressing of farm-yard dung. On a portion of the field the dung was used alone. The former was fit for the hoe several days before the latter; and on weighing portions of each, in January last, there was a superiority of 5 tons to the acre in favor of that portion which had received the addition of sulphated bones.

Mr. J. W. Clark, of Timsbury, used the manure which I supplied him with in the same proportions also, in addition to farm-yard dung, and the Swedes proved the best on his farm. The amount of vitriolized bones used per acre varied in different parts of the field, and the goodness of the crop precisely corresponded to the quantity applied.

Mr. J. Blundell, of Bursledon also used it at the rate of 4 bushels of bones to the acre, with 6 bushels of ashes in competition with night-soil and ashes. On visiting his farm a few weeks afterward, I noticed, at several fields' distance, the superiority of one portion of the field, which I found was that on which the vitriolized bones had been used. The dampness of the season, however, proved so favorable to the development of the other manure that, on weighing them in December, the latter was found about half a ton per acre heavier; the expense, however, was nearly double. The weight of the crop was between 17 and 18 tons per acre. I have no doubt that if Mr. B. had applied 20 bushels of ashes to the acre, instead of 6, with the sulphated bones, the result would have been much more favorable. When we bear in mind the large amount of potash contained in the crop, it must be very evident that it is of importance to supply a good quantity of ashes which contain a fair proportion of potash; I would therefore recommend that 20 bushels of ashes per acre, at least, should always be employed.

Mr. Pocock, of Hickley, used the manure at the rate of 4 bushels per acre, and one-third acid, and was well pleased with the result, though he did not ascertain its amount.

Mr. Withers, of Luzborough, was another farmer to whom I furnished a quantity, prepared as before mentioned, and he reports very favorably of the results.

Mr. Fielder, of Sparsholt, was induced by my representation of its favorable effects to try the manure, and he found that on his light land on the chalk it answered admirably.—Two bushels of vitriolized bones with ashes successfully rivalled a small portion of ground drilled at the rate of 60 bushels of bones to the acre for the purpose of experiment.

Although the vitriolized bone has proved very successful with white turnips, I believe that its peculiar excellences are most fully proved by Swedes. I wished to ascertain this by experiment, and accordingly on the same day and on similar land, a clay loam, 3 acres were drilled with Laing Swedes, and 3 acres with Matson's white globes after tares. The Swedes proved decidedly superior both in the early and later stages; and though the roots, as might have been anticipated, were but of moderate size, in consequence of the very late time of drilling (early in August), yet on comparing a few rods without manure the difference was very striking. A small portion of the globes, drilled with ashes alone, also exhibited a similar inferiority.

It should be observed, however, that in this experiment the land was probably more suited for Swedes than white turnips; but, on the other hand, the lateness of the season was more unfavorable to the Swedes, besides which the crop previous to the globes had been manured with stable-dung, while the other field had received no dressing since 1843.

Supposing that these results are to be attributed to the greater suitability of the manure for Swede, and not owing to other causes, the result is certainly in keeping with the comparative analysis of the ashes of Swedes and white turnips, which tells us that the former contains 408 lbs. of phosphoric acid, and the latter only 73 lbs. in 100,000 lbs. each.

It must be evident from this circumstance that white turnips do not require so large a quantity of bones, whether vitriolized or not; and it also corresponds with the well-known facts that Swedes require a larger quantity of dung to supply the necessary phosphoric acid, and also that white turnips on favorable land can be raised with ashes alone far more easily than Swedes.

I would therefore recommend in all cases, with white turnips, that a less quantity of vitriolized bone be employed, and that guano, or some other manure possessing its properties, should be used in combination with it.

In May last, a portion of land, consisting of $1\frac{1}{2}$ acres, was drilled with Matson's green top globes, and manured with 1 bushel of sulphated bones, 1 cwt. of African guano, and about 25 bushels of turf-ashes, per acre. The crop was a very good one, exceeding 20 tons to the acre.

In several instances within my own knowledge, where guano has been used with ashes, the crop has been destroyed by the pungency of the manure, probably owing to the ammonia which it contains. There is no danger of

this taking place with vitriolized bones; and I have found, though seeds will not vegetate if entirely surrounded with them, they readily will if the manure is mixed with twice its weight of mould.

The last season has not been a favorable one for displaying the peculiar advantages of vitriolized bones; or, rather, it has been from its wetness so favorable for common bones, and every other description of manure, that an indifferent field of turnips has been the exception and not the rule. It is in a dry season, when the fly is particularly rife and active, when crop after crop is destroyed by this entomological pest, that the advantage of insuring a vigorous growth to young plants is properly appreciated. Among all the specifics or antidotes for the fly, there is none, I believe, equal to the employment of vitriolized bones. Hitherto I have not met with or heard of a single instance in which it has failed to force the plants out of the way of the fly. It is in a dry season, too, that the advantages of early and vigorous growth are shown, when the plant may languish for weeks for want of rain with ordinary manures, and thus lose time that never afterward can be compensated for.

In a garden experiment tried on a small scale, to show the effect of different preparations in forcing the young plant out of ground, I found the following results:

1. Vitriolized bone applied in solution above the seed caused the plant to appear on the fourth day.

2. The same applied below the seed brought up the plant on the fifth day.

3. Vitriolized bones as compost brought up the plant on the sixth day, both when applied above and below the seed.

4. Sulphuric acid and water below the seed caused the turnip to make its appearance on the sixth day.

5. Bone-dust below the seed brought up the plant on the seventh day, the same time as it appeared where no manure was employed.

In the above instances, with the exception of the fourth, the expense of the manure was the same in each case.

General Conclusions.

From the facts and reasons which we have detailed and urged in our preceding Essay, as well as from information supplied by previous experimenters, we may deduce the following conclusions:

1. That superphosphate of lime is the essential manure for turnips, and particularly for Swedes. That with it alone a good crop can be raised; but without it the turnip will not thrive, however rich the manure may otherwise be.

2. In preparing the mixture, the bones should be in as fine a state as possible.

3. That sulphuric acid, from its greater strength and cheapness, is preferable to muriatic acid.

4. That water, in the proportion of one-half the weight of the acid, should be first sprinkled over the bones.

5. The proportion of sulphuric most economical to employ should not be less than one-third, nor more than one-half the weight of the bones, and that probably the medium between these two quantities is most advantageous.

6. That the mixture can be applied either diluted with a considerable quantity of water by the aid of a water-cart, or with ashes by means of an ordinary drill. That though the former may be more speedy in its effects, the latter can be more conveniently applied, and has the advantage of admitting the addition of a large quantity of ashes.

7. That vitriolized bones may be used either alone or with other manures, and that when the latter are at hand, it is more advantageous to use the former in combination with them. For instance, if there are 30 acres to be prepared, and only sufficient dung to dress 15 acres, it is better to give a half-dressing of dung over the whole of the turnip break, and make up the deficiency by means of sulphated bones. Thus the plant will be forced in its early, and supported in its later growth. For the same reason, vitriolized bones may be advantageously combined with guano.

8. That vitriolized bones are equally advantageous to the second year's crop, when the turnips are either wholly or partially fed off with sheep.

9. That, while the economy of this manure is thus proved by practice, it can be as readily explained by theory, *e. g.*: The tops of Swedes are known to possess double the phosphoric acid contained in the bulbs. Thus the superphosphate of lime in the manure causes the rapid development of the leaves—one of its peculiar properties. The leaves being thus early and largely developed, are enabled to extract a considerable portion of nourishment from the atmosphere—much more, indeed, than where the leaves are small and backward. The difference between the amount of food derived from the atmosphere by a forward and flourishing crop, and that obtained by a backward and dwarfish crop, is so much absolute gain to the farmer, or rather to the land. It costs nothing on the one hand, but yields considerably to the land if the crop is fed off on the other. A manure that would thus force on the turnip in the early stages of its growth, was long felt to be a desideratum by agriculturists. This want has now been supplied; and even if this were the only recommendation sulphated bones possessed, its discovery and introduction would still be a boon.

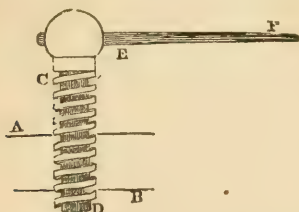
Lastly. The value of vitriolized bone may now be considered to be fully and fairly established. Its claims rest not on the assertions of a few experimenters. It has been tried during the last season by hundreds with success, and in the next it will be tried by thousands. It affords, in fact, a triumphant

THE SCREW.

From Dr. Dion. Lardner's Lectures.

IN the application of the screw, the weight or resistance is not, as in the inclined plane and wedge, placed upon the surface of the plane or

Fig. 8 thread. The power is usually transmitted by causing the screw to move in a concave cylinder, on the interior surface of which a spiral cavity is cut, corresponding exactly to the thread of the screw, and in which the thread will move by turning round the screw continually in the same direction. This hollow cylinder is usually called the *nut* or *concave screw*. The screw surrounded by its spiral thread is represented in fig. 8; and a section of the same playing in the nut is represented in fig. 9.



There are several ways in which the effect of the power may be conveyed to the resistance by this apparatus.

First, let us suppose that the nut A B is fixed. If the screw be continually turned on its axis, by a lever E F inserted in one end of it, it will be moved in the direction C D, advancing every revolution through a space equal to the distance between two contiguous threads. By turning the lever in an opposite direction, the screw will be moved in the direction D C.

If the screw be fixed, so as to be incapable either of moving longitudinally or revolving on its axis, the nut A B may be turned upon the screw by a lever, and will move on the screw toward C or toward D, according to the direction in which the lever is turned.

In the former case, we have supposed the nut to be absolutely immovable; and, in the latter case, the screw to be absolutely immovable. It may happen, however, that the nut, though capable of revolving, is incapable of moving longitudinally; and that the screw, though incapable of revolving, is capable of moving longitudinally. In that case, by turning the nut A B upon the screw by the lever, the screw will be urged in the direction C D or D C, according to the way in which the nut is turned.

The apparatus may, on the contrary, be so arranged that the nut, though incapable of revolving, is capable of moving longitudinally; and the screw, though capable of revolving, is incapable of moving longitudinally. In this case, by turning the screw in the one direction, or in the other, the nut A B will be urged in the direction C D or D C.

All these various arrangements may be observed in different applications to the machine.

A screw may be cut upon a cylinder by placing the cylinder in a turning-lathe, and giving it a rotatory motion upon its axis. The cutting point is then presented to the cylinder, and moved in the direction of its length, at such a rate as to be carried through the distance between the intended thread, while the cylinder revolves once. The relative motions of the cutting point and the cylinder being preserved, with perfect uniformity, the thread will be cut from one end to the other. The shape of the threads may be either square, as in fig. 8, or triangular, as in fig. 10.

The screw is generally used in cases where severe pressure is to be excited through small spaces; it is, therefore, the agent in most presses. In fig. 11, the nut is fixed, and by turning



Fig. 11.

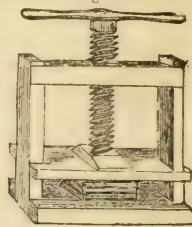
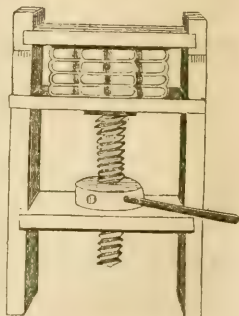


Fig. 12.



the lever, which passes through the head of the screw, a pressure

is excited upon any substance placed upon the plate immediately under the end of the screw.—In fig. 12, the screw is incapable of revolving, but is capable of advancing in the direction of its length. On the other hand, the nut is capable of revolving, but does not advance in the direction of the screw.—

When the nut is turned by means of the screw inserted in it, the screw advances in the direction of its length, and urges the board which is attached to it upward, so as to press any substance placed between it and the fixed board above.

In cases where liquids or juices are to be expressed from solid bodies, the screw is the agent generally employed. It is also used in coining, where the impression of a die is to be made upon a piece of metal, and in the same way in producing the impression of a seal upon wax or other substance adapted to receive it. When soft and light materials, such as cotton, are to

be reduced to a convenient bulk for transportation, the screw is used to compress them, and they are thus reduced into hard, dense masses. In printing, formerly, the paper was urged by a severe and sudden pressure upon the types by means of a screw.

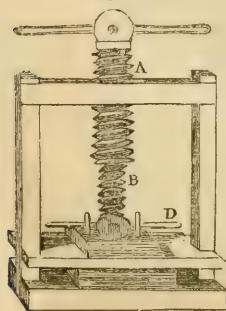
As the mechanical power of the screw depends upon the relative magnitude of the circumference through which the power revolves, and the distance between the threads, it is evident, that to increase the efficacy of the machine, we must either increase the length of the lever by which the power acts, or diminish the magnitude of the thread. Although there is no limit in theory to the increase of the mechanical efficacy by these means, yet practical inconvenience arises which effectually prevents that increase being carried beyond a certain extent. If the lever by which the power acts be increased, the same difficulty arises as was already explained in the wheel and axle: the space through which the power should act would be so unwieldy, that its application would become impracticable. If, on the other hand, the power of the machine be increased by diminishing the size of the thread, the strength of the thread will be so diminished, that a slight resistance will tear it from the cylinder. The cases in which it is necessary to increase the power of the machine being those in which the greatest resistances are to be overcome, the object will evidently be defeated if the means chosen to increase that power deprive the machine of the strength which is necessary to sustain the force to which it is to be submitted.

These inconveniences are removed by a contrivance of Mr. Hunter, which, while it gives to the machine all the requisite strength and compactness, allows it to have an almost unlimited degree of mechanical efficacy.

This contrivance consists in the use of two screws, the threads of which may have any strength and magnitude, but which have a very small difference of breadth. While the working point is urged forward by that which has the greater thread, it is drawn back by that which has the less; so that, during each revolution of the screw, instead of being advanced through a space equal to the magnitude of either of the threads, it moves through a space equal to their difference. The mechanical power of such a machine will be the same as that of a single screw, having a thread whose magnitude is equal to the difference of the magnitudes of the two threads just mentioned.

Thus, without inconveniently increasing the

Fig. 13.



nut; B is the lesser thread,

sweep of the power, on the one hand, or on the other, diminishing the thread until the necessary strength is lost, the machine will acquire an efficacy limited by nothing but the smallness of the difference between the two threads.

This principle was first applied in the manner represented in fig. 13. A is the greater thread, playing in the fixed

cylinder, and playing in a concave screw, cut within the greater cylinder. During every revolution of the screw, the cylinder A descends through a space equal to the distance between its threads. At the same time, the smaller cylinder B ascends through a space equal to the distance between the threads cut upon it: the effect is, that the board D descends through a space equal to the difference between the threads upon A and the threads upon B, and the machine has a power proportionate to the smallness of this difference.

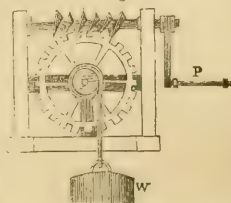
Thus, suppose the screw A has twenty threads in an inch, while the screw B has twenty-one: during one revolution, the screw A will descend through a space equal to the twentieth part of an inch. If, during this motion, the screw B did not turn within A, the board D would be advanced through the twentieth of an inch; but because the hollow screw within A turns upon B, the screw B will, relatively to A, be raised in one revolution through a space equal to the twenty-first part of an inch. Thus, while the board D is depressed through the twentieth of an inch by the screw A, it is raised through the twenty-first of an inch by the screw B. It is, therefore, on the whole, depressed through a space equal to the excess of the twentieth of an inch above the twenty-first of an inch—that is, through the four hundred and twentieth of an inch.

The power of this machine will, therefore, be expressed by the number of times the four hundred and twentieth of an inch is contained in the circumference through which the power moves.

In the practical application of this principle at present, the arrangement is somewhat different. The two threads are usually cut on different parts of the same cylinder. If nuts be supposed to be placed upon these, which are capable of moving in the direction of the length, but not of revolving, it is evident that by turning the screw once round, each nut will be advanced through a space equal to the breadth of the respective threads. By this means the two nuts will either approach each other, or mutually recede, according to the direction in which the screw is turned, through a space equal to the difference of the breadth of the threads, and they will exert a force either in compressing or extending any substance placed between them, proportionate to the smallness of that difference.

A toothed wheel is sometimes used instead of a nut, so that the same quality by which the revolution of the screw urges the nut forward is applied to make the wheel revolve. The screw is in this case called an endless screw, because its action upon the wheel may be continued without limit. This application of the screw is represented in fig. 14. P is the winch to which the power is applied; and its effect at the circumfer-

Fig. 14.



weight or resistance is to be calculated in the

ence of the wheel is estimated in the same manner as the effect of the screw upon the nut.—This effect is to be considered as a power acting upon the circumference of the wheel; and its proportion to the

same manner as the proportion of the power to the weight in the wheel and axle.

We have hitherto considered the screw as an engine used to overcome great resistances. It is also eminently useful in several departments of experimental science, for the measurement of very minute motions and spaces, the magnitude of which could scarcely be ascertained by any other means. The very slow motion which may be imparted to the end of a screw, by a very considerable motion in the power, renders it peculiarly well adapted for this purpose. To explain the manner in which it is applied—suppose a screw to be so cut as to have fifty threads in an inch, each revolution of the screw will advance its point through the fiftieth part of an inch. Now, suppose the head of the screw to be a circle, whose diameter is an inch, the circumference of the head will be something more than three inches; this may be easily divided into a hundred equal parts distinctly visible. If a fixed index be presented to this graduated circumference, the hundredth part of a revolution of the screw may be observed, by noting the passage of one division of the head under the index. Since one entire revolution of the head moves the point through the fiftieth of an inch, one division will correspond to the five thousandth of an inch. In order to observe the motion of the point of the screw in this case, a fine wire is attached to it, which is carried across the field of view of a powerful microscope, by which the motion is so magnified as to be distinctly perceptible.

A screw used for such purposes is called a *micrometer screw*. Such an apparatus is usually attached to the limbs of graduated instruments, for the purpose of astronomical and other observation. Without the aid of this apparatus, no observation could be taken with greater accuracy than the amount of the smallest division upon the limb. Thus, if an instrument for measuring angles were divided into small arches of one minute, and an angle were observed which brought the index of the instrument to some point between two divisions, we could only conclude that the observed angle must consist of a certain number of degrees and minutes, together with an additional number of seconds, which would be unknown, inasmuch as there would be no means of ascertaining the fraction of a minute between the index and the adjacent division of the instrument. But if a screw be provided, the point of which moves through a space equal to one division of the instrument, with sixty revolutions of the head, and the head itself be divided into one hundred equal parts, each complete revolution of the screw will correspond to the sixtieth part of a minute, or to one second, and each division on the head of the screw will correspond to the hundredth part of a second. The index being attached to this screw, let the head be turned until the index be moved from its observed position to the adjacent division of the limb. The number of complete revolutions of the screw necessary to accomplish this will be the number of seconds; and the number of parts of a revolution over the complete number of revolutions will be the hundredth parts of a second necessary to be added to the degrees and minutes primarily observed.

It is not, however, only to angular instruments that the micrometer screw is applicable; any spaces whatever may be measured by it. An instance of its mechanical application may be mentioned in a steel-yard, an instrument for as-

certaining the amount of weights by a given weight, sliding on a long graduated arm of a lever. The distance from the fulcrum, at which this weight counterpoises the weight to be ascertained, serves as a measure to the amount of that weight. When the sliding weight happens to be placed between two divisions of the arm, a micrometer screw is used to ascertain the fraction of the division.

Hunter's screw, already described, seems to be well adapted to micrometrical purposes; since the motion of the point may be rendered indefinitely slow, without requiring an exquisitely fine thread, such as, in the single screw, would in this case be necessary.

COMPARATIVE VALUE OF DIFFERENT KINDS OF FODDER.—The following table is the result of experiments made by the principal agriculturists of the continent, and published by M. Antoine at Nancy. The best upland meadow hay is taken as the standard, at 100 lbs.; and the specified weight of the other kinds of fodder enumerated are required to produce the same results :

Good hay.....	lbs. 100
Aftermath hay.....	102
Clover hay, made when the blossom is completely developed.....	90
Ditto, before the blossom expands.....	88
Clover, second crop.....	98
Lucerne hay.....	98
Sainfoin hay.....	89
Tare hay.....	91
Spargula arvensis, dried.....	90
Clover hay, after the seed.....	146
Green Indian corn.....	275
Vetches or tares, green.....	410
Green clover.....	457
Green spargula.....	425
Stems and leaves of Jerusalem artichokes.....	325
Cow-cabbage leaves.....	541
Beet-root leaves.....	600
Potato haulm.....	300
Rye straw.....	442
Oat straw.....	196
Peas haulm.....	153
Vetch haulm.....	159
Bean haulm.....	140
Ruckwheat straw.....	195
Dried stalks of Jerusalem artichokes.....	170
Dried stalks of Indian corn.....	400
Millet straw.....	250
Raw potatoes.....	201
Boiled ditto.....	175
White Silesian beet.....	220
Mangel-wurzel.....	839
Turnips.....	504
Carrots.....	276
Swedish Turnips.....	308
Ditto, with leaves on.....	350
Grain—Rye.....	54
Wheat.....	42
Barley.....	54
Oats.....	59
Vetches.....	50
Peas.....	45
Beans.....	45
Buckwheat.....	64
Indian corn.....	57
Linseed cake.....	69
Wheat bran.....	105
Rye bran.....	109
Wheat, peas and oat chaff.....	167
Rye and barley chaff.....	179

The Plough, the Loom, and the Anvil.

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THE FIRST TAX TO BE PAID BY LABOR IS TRANSPORTATION.

BY HENRY C. CAREY, ESQ.

ADAM SMITH taught that the right place for the artisan was that in which food was cheap, and the raw materials for manufacture were abundant. He could then eat the one while converting the other and fitting them for cheap transportation to distant countries. The modern English school of political economy teaches, on the contrary, that the food and the raw material should be carried to the workman; an operation that, if repeated each and every year for a thousand years, would have to be repeated again in the thousand and first; whereas, the workman once placed in the midst of the food, the work is done for ever, and thereafter the food raised upon the land is consumed upon the land. Such is not, however the doctrine of those who seek to make of England the workshop of the world. By them it is held that the ship which *carries* the food is as productive of food as the earth which *yields* it. Men are required to disperse themselves over the earth in quest of land whose products may find employment for ships and wagons. The power to associate is thereby diminished, and as *every act of association is an act of trade*, the power to trade should therefore be found to undergo a similar diminution. Nevertheless, it is in that direction that we are taught by Mr. Walker to look for increase of trade, and the system now known by the name of "free trade," and which looks to the *centralization of machinery in Great Britain*, is urged upon the world as being the mode in which trade may be increased. Adam Smith looked to an extension of intercourse with other nations, based upon a great internal commerce, consequent upon an increase of population, and increase of the power of association. With him, COMMERCE FORMED A TRUE PYRAMID. His successors look for an extension of the foreign trade consequent upon the export of population and the diminished power of association. With them, TRADE IS AN INVERTED PYRAMID, and hence it is that we see in England a perpetual succession of revulsions, destructive to herself and to all connected with her. Her present position could scarcely be better described than in the following words of the great father of political economy:—

The whole system of her industry and commerce has thereby been rendered less secure; the whole state of her body politic less healthful than it otherwise would have been. In her present condition *Great Britain resembles one of those unwholesome bodies in which some vital parts are overgrown*, and which, upon that account, are liable to many dangerous disorders, scarce incident to those in which all the parts are more properly proportioned. A small stop in that great blood-vessel, which has been artificially swelled beyond its natural dimensions, and through which an unnatural portion of the industry and commerce of the country has been forced to circulate, is very likely to bring on the most dangerous disorders upon the whole body politic.

Such is the description of England written more than seventy years since, and the only difference between her condition then and now is, that the disease has since been greatly aggravated. We now ask the reader to study the following description of English colonial policy at the date of the publication of the *Wealth of Nations*, and to compare it with that of the present day, that he may satisfy himself how perfectly the latter is in accordance with that which the illustrious author of that great work denounced as being "a manifest violation of the most sacred rights of mankind," and as tending to produce at home not only "very dangerous disorders in the body politic, but disorders which it is often very difficult to remedy," the natural consequence of her desire to make herself the "workshop of the world." It is from a work of high reputation, containing an admirable account of the condition of agriculture in these colonies shortly previous to the Revolution :—

In case of such a settlement being made, the whole valuable part of that continent, the southern division of it, would then be in the desirable state of improvement: the population, from being so spread round a great extent of frontier, would increase without giving the least cause of *jealousy to Britain*; land would not only be plentiful, but plentiful where our people wanted it; whereas at present, the population of our colonies, especially the central ones, is confined; they have spread over all the space between the sea and the mountains, the consequence of which is, that land is become scarce, that which is good having become all planted or patented, the people therefore find themselves *too numerous for their agriculture, which is the first step to be manufacturers, that step which Britain has so much reason to dread*. Nothing, therefore, can be *more political* than to provide a superabundance of colonies to take off those people that find a want of land in our old settlements; and it may not be one or two tracts of country that will answer this purpose; provision should be made for the convenience of some, the inclinations of others, and every measure taken to inform the people of the colonies that were growing too populous, that land was plentiful in other places, and granted on the easiest terms; and if such inducements were not found sufficient for *thinning the country considerably, government should by all means be at a part of the expense of transporting them*. Notice should be given that sloops should always be ready at Fort Pitt, or as much higher on the Ohio as it is navigable, for carrying all families, without expense, to whatever settlements they choose on the Ohio or the Mississippi. Such measures, or similar ones, would curvy off that surplus of population in the central and northern colonies which has been, and will every day be, more and more the foundations of their manufactures. They never could establish such fabriques, while the plenty of good land in a good climate was so great as to afford every man an opportunity of settling; for while that was the case, none would let themselves as workmen in a manufacture. Consistent with these ideas, we see that those colonies where the good land is most plentiful in a good climate, the manufactures are trifling, or none to be found, which is the case with the tobacco colonies and with the southern ones; but in the northern settlements, where these circumstances are different, we there find many fabriques.

Nothing can be more fortunate than the navigation of the Ohio quite to the Apalachean mountains, at the back of the centre of all our colonies, since by that means people may, with only a small or a moderate journey, arrive at a navigation that will carry them through all that immense tract which we may in future colonize, a part of which we are now about to settle, and yet more of which I am urging the propriety of likewise settling. Were it not for this vast navigation, to the very spot almost that one would wish to have it, there would be difficulties in the people getting to the countries we wanted them to settle in; but as we possess this great advantage, it would be unpardonable not to make effectual use of it, in case the establishment of new colonies did not of itself draw the whole surplus of population away from those provinces, *the numbers in which want so much to be thinned*.

Nor is the advantage of drawing off people from the northern colonies confined to the prevention of manufactures; it is further of vast consequence to take them from countries that produce nothing valuable in a British market, and fix them in others abounding with staples of high importance to the commerce and manufactures of the mother country; *this single idea ought to be the corner-stone of all the regulations and measures adopted by this country in her transactions with America*; and if it is well pursued in future, will keep off the dangerous rivalry, which there is so much reason to fear, from the manufactures and commerce of the northern colonies.

If we now compare this with what is being done in Canada, India, and Australia, we shall find no difference. The theory of the British system is—now as it was then, there as it was here—that of the *territorial* division of labor. The Hindoo is to raise rice and cotton, that the Englishman may eat the one while spinning and weaving the other; and the more perfectly this idea can be carried out, the greater, it is supposed, will be the prosperity of both England and India. The result, however, does not answer expectation, as the reader will see by the following paragraph from the highest “free trade” authority:—

Looking to our Indian empire, we cannot but be struck with the singular facilities which—in climate, soil, and population—it presents to the commerce of Great Britain. At first sight, it seems to offer every thing that could be devised, in order to induce to a commercial intercourse almost without limit. There is scarcely one important article of tropical produce which is consumed in this country, either as the raw material of our manufactures, or as an article of daily use, for the production of which India is not as well, or better, adapted than any other country; while its dense and industrious population would seem to offer an illimitable demand for our manufactures. Nor are there opposed to these natural and flattering elements of commerce any fiscal restrictions to counteract their beneficial results. Indian produce has long entered into consumption in the home markets on the most favorable terms; while, in the introduction of British manufactures into India, a very moderate duty is imposed. Yet, notwithstanding all these advantages, *it is a notorious fact, deducible alike from the tendency which the supply of some of the most important articles of Indian produce show to fall off, and from the stagnant, or rather declining, state of the export of our manufactures to those markets—and, perhaps, still more so, from the extremely unprofitable and unsatisfactory result which has attended both the export and import trade with India for some time past—that there exist some great and serious impediments to the realization of the just and fair hopes entertained with regard to our Indian trade.—Economist.*

What is that impediment? That it exists is unquestionable. It may be found by studying Adam Smith, who taught that the way to improve agriculture, to increase the power of production, *and to increase the value of labor*, was to permit the artisan to go to the food, that he might there, while making himself a customer to the farmer, employ himself in the work of converting other raw materials into the forms that fitted them for cheap transportation to foreign markets, *building up a large foreign commerce upon the basis of a vast domestic one*, and thus constructing, as we have said, a true pyramid. The whole tendency of the British system in India has been to destroy the manufactures of that country, and to *compel* the poor Hindoos to make their exchanges in England, by virtue of the system which they call “free trade;” and the result is shown in the following passage, given in a late number of the *North American Review*, from a recent correspondence between the Governor General and the Company, on the subject of the Dacca weavers:—

Some years ago, the East India Company annually received of the produce of the looms of India to the amount of six million to eight million pieces of cotton goods. The demand gradually fell, and has now ceased altogether. European skill and machinery have superseded the produce of India. Cotton piece-goods, for ages the staple manufacture of India, seem for ever lost; *and the present suffering to numerous classes in India is scarcely to be paralleled in the history of commerce.*

We have here precisely the same results that have, among ourselves, followed close upon the heels of every measure tending to diminish the power of the planters and farmers of the country to draw to their sides the men who would eat their food while engaged in converting the raw products of the earth into the forms fitting them for cheap transportation to distant countries.

Throughout his work, Dr. Smith showed himself to be fully acquainted with the fact, that the man who desires to sell his labor or its products, *must pay the*

cost of going to market ; and he failed not to see that the tendency of the whole British system was to increase the labor of transportation, and thus to impose on the people of the world an immense amount of taxation for the maintenance of the system which he denounced as being "fit only for a nation of shopkeepers," but which has yet been maintained, even to the present hour. To what extent it is a tax upon the labor and capital of the world, we propose now to inquire.

THE FIRST OF ALL THE TAXES TO BE PAID BY LABOR IS THAT OF TRANSPORTATION. It takes precedence even of the claims of government, for the man who has labor to sell or exchange *must* take it to the place at which it can be sold. If the market be so far distant that it will occupy so large a portion of his time in going to and returning from his work as to leave him insufficient to purchase food enough to preserve life, he will perish of starvation. If it be somewhat less distant, he may obtain a small amount of food. If brought near, he may be well fed. Still nearer, he may be well fed and poorly clothed. Brought to his door, so as to make a market for all his time, he will be well fed, well clothed, well housed, and he will be able to feed, clothe, lodge, and educate his children.

The reader can scarcely fail to see that here the tax of transportation is, and always must be, the first to be paid. The labor must be carried to market before it can be exchanged, and until the owner of that labor can exchange it for something, even the government can obtain nothing from him. Next, he must have food, but his allowance of that will depend upon the mode in which he and the tax-collector divide the little that is received. In India, the government takes from one half to two thirds of the cotton, leaving the balance to the man who has obtained it in exchange for his labor; and the value of the share left to him is about a rupee or two per month,* which is deemed, by English writers, quite sufficient to afford "profit to the cultivator."

Having paid the tax on the transportation of his labor, obtained food and paid the government, there may next be something for clothing, but for that there can be nothing until he has paid those taxes, and fed himself. These things understood, it may not be difficult to understand why it is that the labor of India and Ireland is unproductive of commodities to be exported, and why it is that India affords so poor a market for the exports of England. The market for the labor of the country is so distant and the cost of transporting it is so great that it is wasted. So is it to an enormous extent in every part of this country.

Every English manufacturer understands perfectly well that the tax on labor, and the inevitable one, is that of transporting it to the place at which it is needed, and therefore it is that whenever the loss is likely to fall upon himself, we find him economizing so carefully the cost of transportation. Having contracted for the services of a given number of persons, during a certain number of hours in the day, he first requires them to place themselves on his premises at a given time, there to remain for the number of hours agreed upon. The labor of transporting themselves to his door must be taken out of their time, and not from his. There arrived, every arrangement is made to prevent them from being compelled to pass from one room to another, or even from one spot to another. The raw material is brought close to the hands of those by whom it is to be first prepared, that they may work undisturbed by any necessity for going abroad to seek it. Near to them are placed the hands under whom it is to undergo the second operation. To

* The value of a rupee is about half a dollar.

them follows a third set, and after them a fourth, and so on to the end; and the work is so perfectly organized that the raw material is every where found following the laborer, and thus the manufacturer obtains the whole amount of the labor for which he had contracted, undiminished by any tax that would otherwise be imposed by the necessity for passing it from one place to another.

In every large concern we find similar efforts for economizing the transportation of labor from one place to another. Among the most remarkable is the arrangement of the General Post-office in London. There the newspapers and letters having been received, and having undergone certain preliminary processes, it is desirable that the sorters, with their boxes of letters and papers, should be transferred to another room, up stairs, an operation that would involve the loss of both time and labor—a tax resulting from the necessity for transportation. To avoid the payment of this tax, the government has caused to be constructed a “lifting machine” which is thus described:—

Within a set of iron bars about three inches asunder, and altogether about ten feet broad, reaching vertically from the floor of the lower halls to those suspended above them, there are in strata a series of platforms nine feet six inches broad by four feet deep, resembling the cages in which wild beasts at country fairs are usually confined, which, by the irresistible power of a steam-engine, are made on one side to rise twenty-eight feet from the lower to the upper halls, and then passing through a slit in the wall, to descend in like manner on the other side, the whole thus circulating like the buckets of a dredging machine. By this contrivance sorters and letter-carriers, accompanied by their baskets and bags, instead of having to toil up and down a steep stair-case, are quickly and most conveniently transferred from one set of halls to the other.

The persons who paid for this expensive machine were perfectly aware that it was they who must pay the cost of transporting the labor from the spot at which it was, to that at which it was needed, and that that cost would be a deduction from the value of the labor for which they had contracted, and for which they would have to pay. Hence they were willing to invest capital to a large amount for the purpose of saving this trifling tax.

We see, here, how large is the price that may be paid for the saving of a few minutes of the labor of a few clerks, every day in the year, and we may now see how large is the loss to a nation when hours, days, and weeks, if not even years, of much of its population are lost, because of the distance of the market for surplus labor. The farmer and his son are frequently not needed on the farm. Their wagon and horses are frequently unemployed. If the market for labor be close at hand—if the coal miners and the furnace men be at work—they can readily exchange their labor for coal and iron. If they have days, half-days, or even hours, to spare, they can cut timber for the use of the miners, and thus clear their land while finding employment for the wagon and horses on other days. If the mines and the furnace be closed, their days and hours and those of the wagon and horses are lost, and they remain at home, idle consumers of food, when they would have preferred to be employed, earning fuel and the materials for axes and ploughs. To make a market for their spare labor there must be diversity of employment, and any system that tends to prevent the existence of such a market imposes thereby a tax upon labor compared with which all the exactions of the most oppressive government are trivial. Such, however, is not only the effect, but the object of the system which is built upon the idea of the territorial division of labor, and which seeks to make of Great Britain the “workshop of the world,” and it is directly the opposite of that of Adam Smith, which looked to making every where a market on the land for the products of the land, in-

creasing the power of association, and producing thus a *local* division of labor, by aid of which every member of a community should find at his door a demand for all his days, half-days, and hours, leaving to himself to exercise in perfection the power of self-government, by determining how much he would sell, to whom he would sell, and what should be its price. The freedom of man would thus go hand in hand with the growth of the power to exchange labor for the commodities required by the laborer.

It is scarcely possible to conceive of an idea more foreign from the truth than that of the "territorial" division of labor, as now taught by the politico-economical school of England. It is one that could never have been invented, or even entertained, by any man who had studied the workings of society elsewhere than within the walls of his library. When, on a former occasion, we called the attention of our readers to the prodigious waste of labor consequent upon this separation of the loom and the anvil from the plough, we offered some views on the subject that we shall here repeat; feeling that it cannot be too strongly impressed upon the people who labor—and we are all laborers—that the tendency of the system of British free trade is to the waste of labor, the diminution in the value of labor, the increase in the power of capital over labor, and the deterioration of the condition of the laborer.

Were it asserted that some nations were fitted to be growers of wheat and others grinders of it, or that some were fitted for cutting down trees and others for sawing them into lumber, it would be regarded as the height of absurdity, yet it would not be more absurd than that which is daily asserted in regard to the conversion of cotton into cloth, and implicitly believed by tens of thousands even of our countrymen. The loom is as appropriate and necessary an aid to the labors of the planter as is the grist-mill to those of the farmer. The furnace is as necessary and as appropriate an aid to the labors of both planter and farmer as is the saw-mill, and those who are compelled to dispense with the proximity of the producer of iron, labor to as much disadvantage as do those who are unable to obtain the aid of the saw-mill and the miller. The loom and the anvil are, like the plough and the harrow, but small machines, naturally attracted by the great machine, the earth, and when so attracted all work together in harmony, and men become rich, and prosperous, and happy. When, on the contrary, from any disturbing cause, the attraction is in the opposite direction, and the small machines are enabled to compel the products of the great machine to follow them, the land invariably becomes poor, and men become poor and miserable, as is the case with Ireland.

To those who doubt the extent of the loss resulting from this unnatural division of labor, we recommend a visit to any farm at a distance of thirty or forty miles from a furnace or a factory, that they may there, on the ground, satisfy themselves of the fact. They will there see days perpetually wasted for want of means of occupation—and other days on the road carrying to market small amounts of produce—and general listlessness resulting from the want of stimulus to activity, on the part of the men, while children, male and female, are totally unemployed, and the schoolmaster remains abroad for want of means to pay him when at home. As a general rule, our farmers attach scarcely any value to time. They go to a distant market in preference to selling at a nearer one, when the difference of price to be obtained upon their few pounds of butter, or baskets of vegetables, appears utterly insignificant compared with the loss of time and labor, and they do this because labor is to so great an extent totally valueless. Let the inquirer look to these things for himself, and let him then add the enormous proportion of the labor that is

misemployed in badly cultivating large surfaces instead of small ones—in keeping up fences and roads entirely disproportioned to the product of the land—and finally let him add the waste of intellect from the want of proper instruction and frequent communication with their neighbor men—and then let him determine if the loss is not *five times over* as great as would pay for all the cloth and iron—raw material included—consumed upon the farm. Place the mill there, and all this is saved. The farmer and his horses and wagon are employed in hauling stone and timber for the mill and for houses, and his children find employment in the mill, or in the production of things that can be used by those who work in the mill, and *all* their extra earnings may go for cloth and iron, *for food they had before*. We say all, for with the mill come improved roads, and the facility of sending to market the many things for which a market on the land cannot as yet be made.

The mill and furnace, and the coal mine, are saving-funds, in which the people of the neighborhood deposit the labor and the things which otherwise would be waste, and where these depositories exist, farmers and planters become rich. Where they do not, they remain poor. To those who desire to understand the wonderful effect of the daily deposit of small quantities of labor, we recommend an examination of the saving-fund system of Europe and this country. They will there see how much can be accumulated from small savings when a safe place of deposit is offered, and thence can form a judgment of how much is liable to be wasted for want of such institutions. The people of New England have saving-funds in which they deposit what would be otherwise the waste labor of themselves, their horses and wagons, their sons and their daughters, and much of the produce that would otherwise be wasted, making by the very act a market on the land for the products of the land, and thus are enabled to save the manure, and they grow rich because of these economies. The people of other States waste labor, and water-power, and produce of various kinds, and then they destroy their timber for want of a market for it, and they waste their manure, and thus it is that they remain poor because of this extravagance. One cent per day for each person of the nation is almost eighty millions of dollars in a year. Is there not wasted, for want of a demand for it, labor to quintuple that sum per head? If so, the amount is four hundred millions of dollars, or forty times the price—raw material included—of all the cotton cloths we can afford to buy from abroad.

Were all this saved, it would make a market for four hundred millions of dollars of cottons and woollens, of linens, iron, hardware, agricultural implements, coal, and all of the thousand other things required for the comfort and enjoyment of life. We say four hundred millions of those things, for food they had before, and as they are all consumers to the whole extent of their production, they must expend almost the whole extra production in other things than food. To the extent of these four hundred millions they would be customers to the land and its owner, for the earth is the sole producer.

The increase in the productiveness and consequent value of labor, resulting from bringing to the door of the laborer a market for the commodity he has to sell, is so well exhibited in the following account of the effects resulting from the building of cotton mills in South Carolina, that we are disposed to invite to it the attention of our readers, although it has once before been placed before them :—

The girls of various ages, who are employed at the spindles, had, for the most part, a sallow, sickly complexion, and in many of their faces I remarked that look of mingled distrust and dejection which often accompanies the condition of extreme, hopeless poverty

"These poor girls," said one of our party, "think themselves extremely fortunate to be employed here, and accept work gladly. They come from the most barren parts of Carolina and Georgia, where their families live wretchedly, for hitherto there has been no manual occupation provided for them, from which they do not shrink as disgraceful, on account of its being the occupation of slaves. In these factories, negroes are not employed as operatives, and this gives the calling of the factory girl a certain dignity. You would be surprised to see the change which a short time effects in these poor people. They come bare-footed, dirty, and in rags; they are scoured, put into shoes and stockings, set at work, and sent regularly to Sunday-school, where they are taught what none of them have been taught before—to read and write. In a short time they become expert at their work; they lose their sullen shyness, and their physiognomy becomes comparatively open and cheerful. Their families are relieved from the temptations to theft and other shameful courses which accompany the condition of poverty without occupation."

The writer adds that "at Graniteville, in South Carolina, about ten miles from the Savannah river, a little manufacturing village has lately been built up, where the families of the *crackers*, as they are called, reclaimed from their idle lives in the woods, are settled, and white labor only is employed. The enterprise is said to be in a most prosperous condition."

These poor people had always had labor to sell, but the market for it was so far distant that the amount of labor wasted in reaching the market would have left them none to sell. The cost of transportation was therefore more than the value of the thing to be transported, and therefore it was that it was wasted; that is to say, the tax imposed by reason of the distance from market was equal to the whole value of the thing itself.

To relieve the laborer from the payment of taxes so enormous, there must be diversification of employment; that is, men must be enabled to combine their exertions for the improvement of their common condition. *Every act of association is an act of trade.* The object of the *American system* of protection is that of enabling men to associate, and therefore to increase trade. *British* free trade seeks to separate the loom and the anvil from the plough and the harrow, to diminish the power of association, and therefore to diminish the power to trade. The power to trade and the freedom of trade have invariably grown under full and complete protection. The poor people of South Carolina above described were unable to trade off their labor because of its distance from a market. The market was brought near to them, and trade in labor began. They were enabled to associate their efforts with those of the capitalist. That association may take place, and that it may increase, there must be increased density of population. With increase of population comes division of the land, which ceases to be held in large plantations or overgrown estates. So said Adam Smith; but the modern English school teaches the reverse, and insists that large farms, cultivated by hired laborers, are more productive than small ones, cultivated by men who work for themselves; and hence it is that estates are being to so great an extent "improved," by levelling the houses, and expelling occupants whose ancestors have, in many cases, tilled the same land almost from the date of the Conquest.

Large farms involve heavy taxes on the transport of labor, and these are invariably paid by the laborer himself. He must be on the ground at a fixed hour, and if he live at the distance of a mile, or of two, three, or four miles, he must take *from his own time* as much as is required to do the work of transporting himself to and from the place at which he can exchange labor for food. Had he a little piece of land of his own, the labor thus wasted on the road would be more than would suffice for its cultivation. That, however, is not all. His earnings are now spent in the ale-house, for he has no place of his own upon which to expend his labor. If it rains he has nothing to do; whereas, had he a lot of his own, he would employ his time upon it, notwith-

standing the rain. The system of large farms thus imposes a tax on labor that the laborer himself must pay, and that far, very far exceeds all that is imposed upon him by the government; yet it is the system of the modern English politico-economical school, which teaches free trade while imposing upon the laborer, at home and abroad, a system of taxes heavier than the world has ever yet seen.

The subject has recently occupied much attention in England, and the following remarks upon it are recommended to the reader's attention :—

England, as we have seen, was once a country of landholders, and although the connection of the great body of agricultural laborers with the soil has long been severed, there are still some districts in which the laborers have always been occupiers of land, and others in which the practice of granting them allotments has of late been revived. In many parishes of Rutland and Lincolnshire, especially, the cottagers have never been dispossessed of their little tenements. What has been the consequence? Have their fields been divided into minute patches by never-ceasing partition? Has population become excessive, or has pauperism extended more rapidly than elsewhere? On the contrary, *the peasantry of these counties stand out in most pleasing relief from the melancholy picture which must be drawn of the generality of their brethren.* So comfortable, contented, and well-conducted a race can scarcely be found in any part of the kingdom. The quantity of land occupied by a family is, in general, as large as that of its predecessors two centuries ago, and enables it to keep a cow or two, as well as pigs and poultry, and sometimes a few sheep. The paupers, instead of being extraordinarily numerous, were maintained by a poor's-rate of nine pence in the pound, at a time when in some of the southern counties, where the laborers had nothing beside their wages, the poor-rates absorbed more than half the rent. So far, indeed, is "the allotment system" from encouraging the growth of pauperism, that its abolition has invariably been followed by a great increase of poor's-rates. There are instances on record of parishes in which, until the cottagers were deprived of their plots of land, it was scarcely possible to find any one who would deign to accept parochial relief, in order to protect his birth-place from the obligation of contributing to the support of the poor of neighboring villages. One of these parishes came by purchase into the hands of a single proprietor, who took away the cottagers' gardens, and annexed them to the adjoining farms, or to his own pleasure-grounds. Before another generation had passed away, a poor's-rate of 3s. in the pound had come into existence. In another parish, the rates were raised, by similar means, in seven years, from 1s. 9d. to 3s. in the pound, and in a few years more to 6s. In a third parish, containing fifty-eight landholders, of whom twenty-two were cottagers, the poor's-rates were 6d. in the pound. Forty years afterwards, the cottagers had lost their lands, and the poor's-rates had risen to 4s. in the pound. Nay, the introduction of the allotment system, when properly conducted, has been found almost a specific for parishes already infected with pauperism. Nor can this be wondered at, when the value of a field or garden to a poor man is properly estimated. It has been mentioned that a small farm, properly cultivated, is much more productive than an equal quantity of land in the hands of a large farmer; but few persons are aware how vast is the difference in a farm small enough to be entirely cultivated by the proprietor's family. Three hundred bushels of potatoes per acre are commonly considered a very good crop, but a cottager will obtain, at least, one hundred bushels from a quarter of an acre, besides turnips and cabbages enough to pay his rent. . . . The average profit derived from cottage allotments is at the rate of £20 per acre; and an instance has occurred of a man growing a crop worth £5 on the eighth part of an acre of very indifferent land. . . . These results are owing, in a great measure, to the unremitting industry and attention of the cultivators. . . . *The cultivation costs absolutely nothing.* It does not draw the laborer from work for which he is paid, nor does it even cause him to tire himself before he sets about his employer's business. It is performed partly by his wife and children, who would otherwise be idle, and partly by himself, but only in the evening when his task is done, or on whole days, not exceeding two or three in the year, when he is either not wanted for his master's work, or gets leave to stay at home.—*Thornton on Over-Population.*

Adam Smith looked to the freedom of trade in land and labor, *the great instruments of production.* His successors limit their ideas of free trade to *the mere products* of land and labor. It is clear that there can be no freedom of trade in labor where there is no market for it, as was the case among the

poor people of South Carolina above referred to. Equally clear is it that there can be none where the laborer is obliged to labor on another's farm, and can find no market for his own spare hours and half hours, or the days of his wife and children.

In land, there can be no freedom of trade where it is locked up by settlements and entails; and this is the system which gives us large farms cultivated by hired laborers. If our readers will now examine for themselves the amount of tax upon the labor of the people of England, that results from the fact that there is no market for it at hand, and that it will not bear transportation to a distance, they will have little difficulty in arriving at the conclusion that it is far greater than the amount paid to the government. Nevertheless, the modern English school advocates this system, which tends to the diminution of association, and consequently to the diminution in the power to trade; and it does so in the name of freedom of trade!

The subject of the division of land has recently occupied much of the attention of many of the men of Great Britain who are unable to find in her modern political economy any solution of the difficulties which now present themselves on every side, and which are the necessary result of her maintenance of the system denounced by Adam Smith. Two of them, Mr. Laing, well known by his interesting travels in Norway and Sweden, and Mr. Kay, of Cambridge, have just given to the world their observations on the effects of the division of land in continental countries, an abstract of which is thus given in one of the journals of the day:—

These two travellers perfectly agree in the declaration that during the last thirty or forty years the inequality of social condition among men—the deterioration toward two great classes of very rich and very poor—has made very little progress in the continental states with which they are familiar. They affirm that a class of absolute paupers in any degree formidable from its numbers has yet to be created in those states. They represent in the most emphatic language the immense superiority in education, manners, conduct, and the supply of the ordinary wants of a civilized being, of the German, Swiss, Dutch, Belgian and French peasantry over the peasantry and poorer classes, not only of Ireland, but also of England and Scotland. This is the general and the most decided result with reference to the vital question of the condition and prospects of the peasantry and poorer classes; neither Mr. Laing nor Mr. Kay have any doubt whatever that the advantage rests in the most marked manner with the continental states which they have examined over Great Britain. According to Mr. Laing and Mr. Kay, the cause of this most important difference is—the *distribution of the ownership of land*. On the continent, the people *own and cultivate* the land. In the British islands, the land is held in large masses by a few persons; the class practically employed in agriculture are either *tenants or laborers*, who do not act under the stimulus of a personal interest in the soil they cultivate.

The reason for this is plain. Division of land makes an immense market for labor that would otherwise be wasted. Nevertheless, the English school advocates a system that tends both abroad and at home to prevent the division of land. The following sketch of the effect of the ownership of small pieces of land, as exhibited in Germany, can scarcely fail to remind the reader of the remark of Adam Smith, in regard to the "small proprietor" who views, as he says, "with affection every part of his little territory," and is "of all improvers the most industrious, the most intelligent, and the most successful":—

Here the peasants are not, as with us, totally cut off from property in the soil which they cultivate; totally dependent on the labor afforded by others; on the contrary, they are themselves the possessors. This country is, in fact, in the hands of the people. It is all parcelled out among the multitude; and, wherever you go, instead of great halls, vast parks, and broad lands of the few, you see perpetual evidences of an

agrarian system. Except the woods, the whole land is thrown into small allotments, and upon them the people are laboring busily for themselves.

Here, in the Odenwald, the harvest, which in the great Rhine plain was over in July, was now, in great measure, cut. Men, women, and children were all engaged in cutting it, getting it in, or in tending the cattle. Every where stood the simple wagons of the country with their pair of yoked cows. Women were doing all sorts of work; reaping, and mowing, and threshing with the men. They were without shoes and stockings, clad in a simple, dark-blue petticoat; a body of the same, leaving the white chemise sleeves as a pleasing contrast; and their hair, in some instances, turned up under their little black or white caps; in others hanging wild and sunburnt on their shoulders. The women, old and young, work as hard as the men, at all kinds of work, and yet with right good-will, for they work for themselves. They often take their dinners with them to the fields, frequently giving the lesser children a piece of bread each, and locking them up in their cottages till they return. This would be thought a hard life in England; but hard as it is, it is better than the degradation of agricultural laborers, in a dear country like England, with six or eight shillings a week, and no cow, no pig, no fruit for the market, no house, garden, or field of their own; but, on the contrary, constant anxiety, the fear of a master on whom they are constantly dependent, and the desolate prospect of ending their days in a union work-house.

Each German has his house, his orchard, his road-side trees, so laden with fruit, that if he did not carefully prop up, and tie together, and in many places hold the boughs together with wooden clamps, they would be torn asunder by their own weight. He has his corn-plot, his plot for mangel-wurzel or hay, for potatoes, for hemp, etc. He is his own master, and he therefore, and every branch of his family, have the strongest motives for constant exertion. You see the effect of this in his industry and his economy.

In this country the same effect is, to a considerable extent, produced—greatest in the north, and gradually diminishing as we pass south and west. Every man is working for himself, and anxious to have his own house and lot, or farm, or shop. Those who have houses and lots, and farms and shops, have *in them* their own little savings' banks, in which they deposit all their spare hours, and half hours, their spare dollars and half dollars; and thus there is made, almost insensibly, an addition to the wealth of the community, the amount of which, could it be ascertained, would be deemed incredible. Those who have not yet houses and lots, or farms, or shops, have at hand the little factory, or the little bank, owned in shares—the savings' bank of the neighborhood—in which they make their deposits, there to remain until they shall have enough to buy the house or the farm, or to set up the shop. Wealth thus accumulates rapidly, and produces a constant demand for labor. Every one feels that he *can* "go ahead" if he *will*, and every body, therefore, does; the necessary consequences of which is, that those who are "ahead" must work to keep so. If they pause but for a moment they are left behind; and this is equally true, intellectually and physically. Every man *will* educate his children, and *will* have his own newspaper, and *will* have portraits, whether in oil or daguerreotype, of his family, and *will* invent his own machine; and the rich must study books, and newspapers, and pictures, and machinery, if they would maintain their position in the world.

To this state of things is due the vast productive power of the Union, far exceeding that of the twenty-eight millions composing the population of Great Britain and Ireland, and not to the abundance of land, upon the poor soils of which they have been forced to scatter themselves; expending upon them, and upon distant roads and canals, labor that would have been thrice more productive if employed upon the river bottoms of the older States, upon the marl and the limestone, the coal and the iron; all of which would long since have been done, could they have concentrated themselves as they would naturally have desired to do.

The great commodity in which to trade is labor. It is the thing with which all other commodities are purchased, and the slightest interference tending to

prevent the existence of that freedom of trade therein which shall enable men to dispose to advantage of even minute portions of it, is of more serious importance than a heavy tax upon any commodity whatsoever, not even excepting food. The nearer the market for labor the more perfect is the power to exchange it, and the higher is its price. The more distant the market, the less must be the demand, the more of it must be wasted, and the less must be the power to obtain those necessities, conveniences, and comforts of life for which men are willing to give it in exchange. The tendency of the system of Adam Smith was towards bringing the market to the door of the laborer, by enabling him to combine his efforts with those of his neighbor men. The tendency of the modern system of *British* free trade is to remove the market from the laborer, and to such a distance as shall forbid his combination with other men. The one tended to relieve the laborer from any tax on the transportation of his commodity to market. The perfection of the other would be to raise the tax to its greatest height by sending the laborer to the greatest distance in quest of the richest soils—the swamps and river bottoms—upon which, according to Mr. Ricardo, the poor emigrant must commence the work of cultivation. *British* free trade is based upon keeping the plough and the loom at the greatest distance from each other, that the employment of ships and wagons may be increased; while that American system which looks to the combination of action between the man who follows the plough and him that drives the shuttle, and that sees therein the true mode of raising the value of land and of elevating the condition of the laborer, seeks to dispense with the employment of ships and wagons, sailors and wagoners, thereby increasing the power of production and facilitating the approach of *perfect* freedom of trade. The one tends to increase the *necessity* for competing with the labor of the people of distant lands—with the people who have for sale that which is called cheap labor, and who are fed with the products of what is called cheap land. The other tends to increase the *power* of competition and to diminish the *necessity* for it, and therefore it is that the value of labor and land has invariably increased under the American system, and as invariably diminished with every tendency towards the adoption of the British colonial one. It is for the farmers and planters of the Union to determine if they will continue to be colonists in fact, subject to the same system that has destroyed the value of labor and land in Ireland and India; or if they will carry into full effect that AMERICAN SYSTEM which, imperfectly as it has been adopted, has given value to the labor and land of the Union, and would in less than ten years establish so completely the power of association as to relieve us from all necessity for interference with trade as a means of raising revenue, and would double the productiveness of labor, doubling therewith the value of both labor and land, to the infinite advantage of both land-owner and laborer. The *first thing to be paid by LABOR AND LAND is transportation*, and whatever tends to diminish the *necessity* for transportation tends to increase the *power* of those who desire to sell their labor or the products of their land.

COAL-ASHES.—I beg to offer, for the information of “J. B. H.” the result of an application, on a small scale, of coal-ashes on grass land. Part of a piece of wet, heavy land was dressed with them; the result was most satisfactory. It could be easily seen at a considerable distance how far they had been applied; and the crop was quite as heavy as it could have been expected, had good manure been applied. I imagine they act not directly as a manure, but, like charcoal, they are instrumental in absorbing ammonia and other gases, which plants are known to feed rapidly on, and to yield it to the plants, without giving off any of their own substance, which remains unchanged for a series of years.—*W. Wakefield.*

THE EVILS OF DISPERSION.

IN our last we showed the enormous extent of loss resulting from the rapid dispersion of men who, in the effort to cultivate the rich soils of the flats and river-bottoms of the West, find their crops destroyed and their lands covered with sand, because of the deficiency of the means of preservation against inundation, to acquire which requires that combination of action which can take place only where men are enabled to live together, making a market on the land for all the products of the land.

We have now to record the existence of another species of evil, more universal and more destructive, that of a deficiency of the water needed by the farmer and planter, producing drought, and followed by a destruction of the crops of both.

The *Concordia* (Louisiana) *Intelligencer* of the 26th instant, in the course of an article on the prospects of the cotton crop, says: "In the parishes of Concordia, Tensas and Madison, great uncertainty and doubt hang over the amount which will be produced. The season is two weeks later than ordinary seasons; and to make even an average crop in these three parishes, we must have one of the most remarkably favorable autumns ever known."

The *Prairie Star*, published at Marksville, Avoyelles parish, says: "All the information that we have been able to obtain from various sources, appears to be the prevailing opinion of the most intelligent planters that the crop will be short. There will not be a sufficiency of corn produced in the parish for breadstuffs; the third of a cotton crop will be made, no doubt. The cane crops suffer very much for want of rain, as well as all kinds of vegetables."

The *Harrisonburg Advocate* of the 24th instant says: "We saw a few days ago a limb of the cotton plant pulled from a stalk in the field of the Rev. T. A. Routman, in the pine hills, about twelve inches long, containing seven joints and fifteen forms, all promising a perfect yield, besides numerous germs at the end. Can any of your swamp plantations beat that?"

The *Brandon* (Miss.) *Republican* of the 23d instant, in speaking of the dry weather, remarks: "In some sections the corn crops are literally ruined, gardens have suffered extremely, and cotton is to some extent injured."

Such has been, and such must ever be, the case, where men are engaged in exhausting the land, and are perpetually flying from each other to find new soils to be again exhausted, as is the case throughout this country; and the consequence is, that the loss to the farmers and planters of the Union from drought is twice greater than the value of all the cloth and the iron that they are enabled to consume. The object of the tariff of 1842 was that of enabling men to live together, combining their efforts for all useful purposes, the ditching and draining of their lands, their preservation against floods, and their preservation against drought by means of irrigation. Desirous to call the attention of our readers to the advantages resulting from this latter mode of rendering available the vast bodies of water by which this country is every where traversed, we lay before them the following remarks upon the irrigation and the planting of Lombardy, persuaded that they will agree with us that rivers were made to aid in the *production* of food and the raw materials of clothing, as well as in the *transportation* of those products; and that they will be made so to do whenever the policy of the country can be directed towards *efficient protection as the true and only mode of reaching perfect freedom of trade*:—

American agriculture has just two arts to learn from Lombardy—Irrigation and Tree-planting. Nearly all our great intervalles might be irrigated immensely to the profit of their cultivators. Even where the vicinity of mountains or other high grounds did not

afford the facility here taken advantage of, I am confident that many plains as well as valleys might be profitably irrigated by lifting water to the requisite height and thence distributing it through little canals or ditches as here. Where a head of water may be obtained to supply the requisite power, the cost need not be considerable after the first outlay; but, even though steam power should be requisite, in connection with the admirable pumping machinery of our day, irrigation would pay liberally in thousands of cases. Such easily parched levels as those of New-Jersey and Long Island would yield at least double their present product if thoroughly irrigated from the turbid streams and marshy ponds in their vicinity. Water itself is of course essential to the growth of every plant, but the benefits of irrigation reach far beyond this. Of the fertilizing substances so laboriously and necessarily applied to cultivating lands, at least three times as great a proportion is carried off in running water as is absorbed and exhausted by the crops grown by their aid; so that if irrigation simply returned to the land as much fertility as the rains carry off, it would, with decent husbandry, increase in utility from year to year. The valley of the Nile is one example among many of what irrigation, especially from rivers at their highest stage, will do for the soil, in defiance of the most ignorant, improvident and unskilful cultivation. Such streams as the Ravitan, the Passaic, and most of the New-Jersey rivers, annually squander upon the ocean an amount of fertilizing matter adequate to the comfortable subsistence of thousands. By calculation, association, science, labor, most of this may be saved. One hundred thousand of the poor immigrants annually arriving on our shores ought to be employed for years in New-Jersey alone, in the construction of dams, canals, &c., adequate to the complete irrigation of all the level or moderately sloped lands in that State. Farms are cheaper there to-day than in Iowa for purchasers who can pay for and know how to use them. Long Island can be rendered eminently fertile and productive by systematic and thorough irrigation; otherwise I doubt that it ever will be.

Much of Lombardy slopes very considerably toward the Po, so that the water in the larger or distributing canals is often used to run mills and supply other mechanical power. It might be used also for manufacturing, if manufactures existed here, and nearly every farmer might have a horse-power or so at command for domestic uses if he chose. We passed yesterday the completely dry beds of what seemed to be small rivers, their water having been entirely drawn away into the irrigating canals on either side, while on the other bank there were grist-mills busily at work, and had been for hundreds of years, grinding by water-power where no stream naturally existed. If I mistake not, there are many such in this city, and in nearly all the cities and villages of Lombardy. If our farmers would only investigate this matter of irrigation as thoroughly as its importance deserves, they would find that they have neglected mines of wealth all around them more extensive and far more reliable than those of California. One man alone may not always be able to irrigate his farm, except at too great a cost; but let the subject be commended to general attention, and the expense would be vastly diminished. Ten thousand farms together, embracing a whole valley, may often be irrigated for less than the cost of supplying a hundred of them separately. I trust our agricultural papers will agitate this improvement.

As to Tree-planting, there can be no excuse for neglecting it, for no man needs his neighbor's co-operation to render it economical or effective. We in America have been recklessly destroying trees quite long enough; it is high time that we began systematically to reproduce them. There is scarcely a farm of fifty acres or over in any but the very newest States that might not be increased in value \$1,000 by \$100 judiciously expended in tree-planting, and a little care to protect the young trees from premature destruction. All road-sides, steep hill-sides, ravines and rocky places should be planted with oak, hickory, chestnut, pine, locust, &c., at once; and many a farm would, after a few years, yield \$100 worth of timber annually, without extracting \$10 from the crops otherwise depended on. By planting locust, or some other fast-growing tree alternately with oak, hickory, &c., the former would be ready for use or sale by the time the latter needed the whole ground. Utility, beauty, comfort, profit, all combine to urge immediate and extensive tree-planting; shall it not be commenced?

Here in Lombardy there is absolutely no farm, however small, without its bowers of mulberry, poplar, walnut, cherry, &c., overshadowing its canals, brooks, roads, &c., and traversing its fields in all directions. The vine is very generally trained on a small tree, like one of our plum or small cherry trees, so that, viewed at a distance or a point near the ground, the country would seem one vast forest, with an undergrowth mainly of wheat and Indian corn. Potatoes, barley, rye, &c., are grown, but none of them extensively, nor is much of the soil devoted to grass. There are no forests, properly so called, but a few rocky hill-sides, which occur at intervals, mainly about half way from Venice

to Milan, are covered with shrubbery which would probably grow to trees if permitted. Wheat and all summer grains are very good; so is the grass; so the Indian corn will be, where it is not prevented by the vicious crowding of the plants and sugar-loaf hoeing of which I have frequently spoken. I judge that Italy altogether, with an enormous area planted, will realize less than half the yield she would have from the same acres with judicious cultivation. With potatoes, nearly the same mistake is made, but the area is not one tenth that of corn, and the blunder far less vital.—*Tribune*.

BRITISH CENSUS AND BRITISH FREE TRADE.

THE British census, which has just been completed, brings to light the striking fact that the entire increase for the last ten years in the population of England, Scotland, Wales, Ireland, and the islands in the British Seas, is but 640,220. This moreover is subject to a large deduction, from the fact that the census of 1851 includes the seamen in the naval and merchant service and persons on board of vessels in the ports, all of whom were omitted in the enumeration of 1841. A proper reduction on this account would exhibit the truth that Great Britain has arrived at the period when her population is already stationary, and is likely hereafter to retrograde. If she persists in the policy that now governs her councils, diminution and decline is the inevitable law of her future. Withholding for the moment all reflection on that policy, it may help us to fix the facts in mind, if we remember that during the same period the State of New-York has increased in population 676,174; with an aggregate of less than two millions and a half of people in 1840, she has won and raised and kept a larger increase than the Imperial Islands with their twenty-seven millions of subjects.

The great decrease is in Ireland, which, from a population of 8,175,124 in 1841, has fallen to 6,515,794 in 1851, being 1,659,330 less than it was ten years ago. The Irish in Ireland are absolutely fewer than they were in 1821. In 1841 the number of houses in Ireland was 1,384,360: it is now (or rather was in March, for twenty or thirty thousand have since been destroyed) 1,115,007. More than two hundred and sixty-nine thousand roof-trees have been "levelled"—this is the technical term for pulling down a cabin over the heads of its women and children—and their inhabitants have been driven into the poor-houses—such of them as did not die of hunger and fever, clinging in desperate love or patient despair to their ruined hearths—to be thence redeemed by the savings of their relatives in this country, and brought over the blue water in search of an asylum against English Free Trade.

For all this is the result of Ireland's subjection to that godless system of abominations which England calls Free Trade—a system which, infernal as it is in its application to Ireland, is tender-hearted and charitable there, in comparison with its manifestations in India—which only starves and slaughters an Irish mother and her children now and then, where it sweeps off the poor Hindoos by the thousand. Thus much of mercy Ireland has got from her proximity to her loving sister Isle. England has condemned her to expend her entire energies in raising potatoes to feed her own people, and wheat and the finer grains to feed the English—to ferry across a narrow channel food which was thrown into the Thames by English speculators to prevent a glut in *their* market, while Irishmen were perishing by famine for want of even "lumpers"—potatoes, whose great recommendation is that they are indigestible, "stay longer in the stomach and keep the hunger off." England has sternly restricted Ireland to agricultural production in order that she might continue the great workshop of the world, and she has thus compelled her Irish subjects to send away the grain for which they were ready to perish—to starve in the midst of plenty—to come to England two hundred thousand of them every year, for a little harvest work, from a land in which millions of tillable acres have never been broken up. But England has made her send her products but a little way, and therefore suffer but a little compared with India. England has never, to our recollection, inflicted upon Ireland so bold and wicked a wrong, as that which levied a duty of 10 per cent. upon the cotton manufactures of India—the products of the household industry of the simple Hindoos—to protect the looms of Manchester, while she permitted a duty of but three and a half per cent. to be levied in India, for the purpose of revenue, on the cotton fabrics of Lancashire. This was to compel the Hindoo to send his raw cotton to England to be spun, and bring it back again to wear, instead of spinning it himself under his own tent. This was done in the name of Free Trade, and done thoroughly.

The manufacture of cotton was utterly uprooted from the soil where it first sprung into being. The Hindoo was forced to send his raw cotton to Manchester. It cost some millions of lives, cut off by disease and famine; it covered the sites of once populous cities with jungle, and made the habitations of man a lair for tigers. It destroyed finally the growth of cotton as well as its manufacture, and left the Hindoo more wretched than ever. The only return England has ever made to him is to encourage him to raise poppies and distil opium from them, which she compels the Chinese to buy and to stupefy himself into life-in-death, by the persuasive bayonet and the convincing bomb-shell. These at the last resort, and wherever it will answer, are her agents in giving Free Trade to those who are slow of conviction.

The grand object of what England calls Free Trade is to *undersell* the world; the indispensable means, as she thinks, are *low wages*. When she had accomplished all that could be done by reducing her operatives to the minimum that could keep together an ill-fed, ill-clothed, ill-housed body and a savage, uneducated soul, by such nutriment as could be raised on British soil, it was found that wages were still too high to enable her to undersell the manufacturing competitors that her greed and rapacity have driven abroad, to introduce her arts and skill in the United States, in France, in the Zollverein States, and in Russia. One step remained. It was found that the wages of agriculturists were too high. It made their beef and grain too dear for their fellow-subjects to eat with any hope of underselling the human race. With the faith of Dr. Sangrado, in the system of blood-letting and cold water, the free trade doctors insisted that the difficulty was, there had not been enough of bleeding and drenching. The repeal of the Corn Laws followed, that Englishmen might, by feeding on grain raised by still worse paid labor in Poland and France, and on the shores of the Black Sea, be put on lower wages yet, till the tillers of the soil in Great Britain and Ireland would so come down in *their* wages, as to enable them to feed their countrymen at reduced rates. The experiment has reached the beginning of its end. It has driven, year after year, an increasing number of British subjects to seek refuge in a land where the maxims of British Free Trade, though adopted by a party, and taught with owlish gravity by theorists, are scouted by the native intelligence of a great people who know that population is wealth, and that high wages to labor are signs, as they are the sure instruments, of national wealth, happiness and virtue.—*Rochester Democrat*.

BEFORE AND AFTER.

BUT for whom are reserved those eighty thousand square feet of the tables? What guests are to supply this part of the board? Oh! it is the *affectionate parent extending her loving hand to a once obstinate but now forgiven child*. The mother country has appropriated a position to our young confederacy, and that country which was once tacitly forbidden to manufacture even a hob-nail, is now invited to be a prominent guest at the levee of the arts. The idea is ennobling; it makes us feel our importance in the scale of nations; it strengthens the cords which bind together the pattern Republic; it gives energy, and stimulates us to a yet higher state of advancement.

See steamer after steamer, propelled by a power which it took a Fulton to harness, bearing from our shores to England those numerous specimens of skill which western ingenuity have either invented or perfected—the products of the fields, the forests, and the mines of America, in their natural state, or with artistic skill wrought into the various articles of ornament and use on which well-requited labor has devoted its powers.

Such were the anticipations that were formed in relation to the last grand speculation of England, nicknamed "The World's Fair." What have been the results? The taste, and skill, and ingenuity of our country are derided by all the English journals, and the representative of Virginia at the fair—the representative of that State which, more than almost any other, has contributed to maintain the British colonial system—complains that, because coming from a slaveholding State, he is not treated with even common decency, and assures his friends that the great objects of Britain are those of maintaining a monopoly of manufactures for the world, and annihilating slavery in this country; while we see her starving the population of Ireland down to a point lower than that at which it stood thirty years since, and doing this for the maintenance of her great monopoly.

PRIZE ESSAY ON THE HUSBANDRY OF THE BEST PORTION OF
ENGLAND.

THERE is probably no liberal-minded, intelligent reader who has not wished that he could travel leisurely through the best cultivated portions of England and Scotland, so famed for the excellence of their husbandry. For those who have not the opportunity of doing so, what is the next thing to it? Why, to hear and read the most authentic accounts, to be sure; and hence we have determined to give the following Report, to which was awarded the prize of the Royal Agricultural Society of England, "ON THE AGRICULTURE OF NOTTINGHAMSHIRE," where may be seen the highest exhibitions of skill, the finest specimens of improved cultivation.

We are not unmindful of the old objection, that the lessons it teaches are not applicable, on account of difference of climate, cost of labor, and other circumstances; but let us look at the case. Is it not, even as a matter of curiosity, worth while to be made familiar with that district, which in all England has undergone in the last half century the greatest change for the better?

The inclosures are divided by quickset hedges, and are for the most part large, though varying in that respect, for the sake of convenience, with the size of the farms, which are usually from three hundred to five hundred acres each: some few are, however, considerably larger, although not many exceed one thousand acres. The great proportion of the land which is annually sown with turnips, imparts to the country at all seasons, and especially so during the winter months, as compared with many counties, a pleasing aspect. The bright colors of their leaves, with the flocks of sheep spread over them, give to the gently undulated hills, as they succeed each other over all the western part of the county, a cheerful and highly domestic appearance; an appearance, in short, which is characteristic of England, and can be seen in no other country in Europe.

But words would be wasted on those who need to be stimulated to the perusal of such essays; for, after all, we do raise turnips, barley, grasses, wheat, sheep, cattle, hogs, and horses; and of all these this essay treats as connected with the husbandry of one of the most productive counties of England, and in a manner so perspicuous and exact as to have commanded one of the prizes, always offered with great deliberation, (and never easily won,) by a voluntary patriotic association of gentlemen, which is enlightening *the art of agriculture*; while in that country, and still more in this, *Government is caring only to patronize and enlighten the art of war!*

In this number we take all that is material for the American reader, to the end of the *first year*. In our next, we shall give what relates to the *barley*, the *grass*, and finally, the wheat crop, which is the last in what is called "The Norfolk Four-course System," which prevails also in Nottinghamshire; and in due course we shall give what is said of their various kinds and races of domestic animals.

As a matter of interest to American breeders, we may be allowed to mention, that it was from Blyth, in this county, that the father of the writer imported, through the late Charles Champion, the first pure Short-horns, Champion, White-rose and Shepherdess, and the first Dishley or new Leicestershire sheep. The cattle were sold to Governor Loyd, \$1500 for the three, and the sheep to John Barney, of Delaware, at \$100 each.

It is to the introduction of the Swede turnip that the improved state of farming in Nottinghamshire must be mainly referred. This it is which forms the farmer's sheet-

anchor during at least four or five months, and those the most trying of the year, for the support of his stock.

This invaluable root was, if we are rightly informed, introduced into this county about the commencement of the present century, by the late Colonel Mellish, of Blyth; and small portions of seed were distributed by him to the leading agriculturists of that neighborhood; but as the improved mode of growing turnips in drills was then quite unknown, the success attendant upon the first essays of these gentlemen is said to have been very limited; neither were the results of their efforts of so much value to the animals for whose sustenance they were provided, as might have been supposed. Besides, no implement for cutting the turnip was at that time thought of; and we have been informed by an eye-witness that the sheep to which they were given not being able, without great difficulty, to eat them—doubtless, in part, from their imperfect growth—they were removed from the ground, and pronounced to be, with due respect to Colonel Mellish, a very unsatisfactory article of food to be provided for animals which had not the power to make a meal of them. But as their culture was improved, and machines at length were introduced for slicing them, they obtained that place in the estimation of the farmer which they well deserve, and have ever since held. Indeed, so highly is the Swedish turnip estimated on the light soils, that it forms *the* criterion by which to judge of the degree of cultivation upon any farm; and amply have the farmers of these districts made amends for any deficiencies in their first attempts, by the success which has since crowned their efforts; for we hesitate not to say that heavier crops can be nowhere seen than in some districts of this county, which, in the recollection of persons now living, were deemed too poor to repay the expenses of cultivation.

It would be anticipating our subject to enter at present more fully into the means employed for the attainment of an object of such primary importance; we will only observe here that the expenses incurred in the cultivation of this particular crop, important as it unquestionably is, are not estimated by the mere actual value of that crop, but success attained here is regarded as an earnest of success in each crop throughout the ensuing course. And we could not but be struck with the following fact, in a ride we took through the county in the month of November last, that we found the turnip crop more uniformly good, after a season of drought almost unprecedented, on the western side of the county, than on the eastern and southern sides, although the soils in the former are much more liable to suffer from a dry season than either of the latter; from which we could not but arrive at the conclusion that capital had been more freely expended upon those districts where success had been the greatest, otherwise a superiority would not have been found where it was least to be expected; an expectation founded on a full consideration of the means employed, to which the results must always be correspondent.

And here it may be very naturally asked, on the assumption that such splendid crops of turnips are produced and are in time succeeded by those of grain of equal excellency, on a soil by nature so poor, By what means has a change so happy been effected? To such question we would reply, that it will form the subject-matter of this Essay to enter as fully as possible into the means so used; and we will only say, in concluding these general remarks, that the first great impetus given to the farming of this county was by the introduction of bones as a manure.

It is self-evident that the land which was too poor in the first instance to produce any thing useful, could not without extraneous aid yield what was necessary to improve its first condition; added to which, considerable tracts of these soils lay too far removed from any large towns which otherwise might have furnished, at least in some measure, the means necessary for their improvement; but through the medium of bone-tillage and other light manures, the face of this extensive district has been within the present century entirely changed.

Bones were originally very cheap, and as their effects were strikingly manifest to all who made use of them, they were, until the increasing demand for them raised considerably the price, most lavishly used. It was thought by many that as the quantity used was increased, the effect would follow in the same ratio; and considering how little science in its application to agriculture was then known, we need feel no surprise at an opinion so erroneous being entertained. At length, however, it became evident to some intelligent minds that they were riding too freely a favorite hobby; and it was asserted that the "land required change." The Duke of Portland was one of the first to direct attention to this fact, by publishing the result of experiments carefully made on his own farms, which tended to show that, by repeatedly applying bones to the same soil, the good effects which resulted from their first application were almost or altogether wanting, owing to its repletion of phosphate of lime. Then it was that the farmer began to

look out for substitutes, and hence have followed the long list of artificial manures in their various forms.

The course of cropping usually adopted in the western division of the county is the Norfolk, or four-years' course, namely,

- 1st year, turnips.
- 2d year, barley.
- 3d year, grass seeds or red clover.
- 4th year, wheat.

FIRST YEAR, TURNIPS.

As soon as the wheat crop is removed, the preparation immediately commences for the crop of turnips, by giving the land one, two, or even more *orders* or workings, as it may be necessary or convenient during the dry weather of autumn. This is now most commonly done by putting on the scarifier, which is in general use throughout the district; the land being again crossed by the same, and afterwards worked by lighter harrows until the quitch-grass is ready for being got off. It was formerly the custom to burn this on the ground after being raked together; but it is now more generally, by good farmers, carted away and put into a stack, and after remaining there until dry, used as a bottom for the manure in the yards, where it is useful in absorbing the drainage of urine.

This method of using the quitch-grass has been objected to, but we think without sufficient force, on the ground of its being liable to grow afterwards: to obviate this, it is only necessary to see to its being dry before it is so applied.

It was the practice of an excellent farmer to apply salt by way of assisting the process of decay; and we doubt not that the idea is well worthy of the attention of all who desire to make as much manure on their farm as possible,—which certainly will be the object of every farmer who duly estimates its value.

If the season is favorable for cleaning the fallows, when they receive the last ploughing before winter, they are not unfrequently so perfectly tilled as to be in a fit state for the reception of the seed, which on the dry soils of Nottinghamshire is an advantage that can scarcely be too highly estimated, or too much sought after. As the winter rains then succeed, the land requires to be but little disturbed in the following spring, but remains cool, and is far more certain of producing a crop of turnips than if exposed by repeated ploughings during the drying months of the spring season.

In the winter months, as the manure is made, it is carted out of the yards into the fields where it is intended to be used in the approaching season for the turnip crop. There are various modes of preserving it during the interval which ensues. The one we are inclined to believe the best is, to have it thrown up into hills out of the carts by hand, and not, as is more frequently the case, run upon by the carts, to prevent thereby—what is, after all, an erroneous idea—its overheating. By throwing it lightly together, the fermentation is equal throughout, and will be found so when it is again disturbed. Instead, however, of allowing the gases to escape by exhalation, we would, by all means, recommend a covering of soil to be thrown upon it, sides as well as top, of not less than six inches deep; by which means those gases are repelled back upon the manure itself, and there fixed, instead of wasting themselves on the “desert air.”

Manure so treated will require nothing more doing to it until within a fortnight or three weeks of the time of using, when it ought to be turned, and again covered with the same soil. The expense of covering is very trifling, the advantage attendant upon it very great. There is no need to cart the soil from a distance, but only to make a trench round the manure, the same as if covering potatoes for the winter.

The usual season for sowing the Swede turnip commences the last week in May, or the first in June, and continues till about the 20th of the latter month. If sown earlier, they are liable, on the dry soils, to mildew; if later, they frequently do not attain the same size which they otherwise would. Some experienced farmers prefer a rather late season, from the circumstance of the late-sown turnips being mostly of better quality than those sown earlier. Presuming on the land being perfectly clean, and free from quitch, the usual method is to throw open drills for the reception of the manure, which is done by a common swing plough, in most general use throughout the county, drawn by two horses abreast. The distance between the drills should vary, with the quality of the soil, from 22 to 27 inches. The better the soil, the wider the drills may be drawn, as the plants will be larger, and consequently require more room to expand in. The manure is then carted on by one-horse carts from the hills, as described above, in quantity from 10 to 15 loads to the acre, as it happens to be plentiful or the contrary, or as the farmer may wish to reserve it or not for other purposes. Women and boys then

follow, for the purpose of thoroughly dividing and equally distributing it in the drills. If the manure has been well made in the yards, and afterwards treated in the manner we have described, it will present a black and oily appearance, retaining considerable heat, and giving every indication of strength and goodness. The ridges are then immediately split by another plough, covering in the manure as quickly as possible, which at this season of the year, when evaporation goes on rapidly, is an object of paramount importance. The Northumberland drill now follows upon the newly-made ridges, whilst the mould is fresh and moist, depositing, at one and the same time, *although at different depths*, the seed and such hand manures as may be used. The quantity of seed sown on the acre ought to be varied according to the state of the soil at the time of sowing, and the general character of the soil. On the light soils, if sufficiently moist, every seed may be expected to vegetate, and even then not less than 3 lbs. ought to be sown; but on the stronger soils, which lie more open, and upon which it is, in consequence, more difficult to secure a sufficiency of plants, not less than 4 lbs. should be sown.

We are aware that many will consider this an unnecessary quantity; but, supposing the whole to grow, which is seldom the case, it is only requisite to introduce the hoes somewhat sooner. Plants are much easier thinned from a superabundance than supplied when wanting, particularly on dry soils, where transplanting is attended with uncertainty; and in favor of a large quantity of seed we may cite the Northumbrian practice, which is high authority on the subject.

Amongst a great variety of hand manures now in use, the most common are bones ground either to what is called "dust," or to "half-inch," that is, left in pieces of about that size, and rape-dust mixed with them, which serves to quicken into action their dormant powers. Many substitutes have, however, of late years been made use of, which we propose to notice briefly afterwards, and will only observe that the dressing supplied for the turnip crop forms a very heavy item in the farmer's annual expenditure. In 1842, the present Mr. Milward informed us that he spent that year at Babworth, upon 170 acres of turnips, from 50s. to 70s. an acre, and even more than that sum, for the greater part of his crop was Swede turnips, which received half-a-ton of rape-dust to the acre, at a cost of £7 7s. a ton, the price current for the year. The turnips were, however, good in proportion, inasmuch that, the great breadth considered, and the quality of the soil upon which they were grown, they were the best we have ever seen. I have heard Mr. Milward observe that he has spent upon the same farm, consisting of about 550 acres of arable land, upwards of £600 in linseed-cake in one year; and, supposing the half of this cake to have been consumed in the yards by beasts, and the manure applied to the turnip crop, the two items form together a very heavy outlay of capital.

But it may be urged that the case here adduced is an extreme case, and a solitary one, and that the farming of an individual forms no criterion whereby to judge of a district. But to such a remark we would rejoin, that it is by no means a solitary case; that, on the contrary, there are many tenant-farmers in the same neighborhood who are farming with equal spirit; and that such a degree of cultivation amongst the sand-land farmers forms the rule rather than the exception.

As soon as the young plants are large enough to admit the horse-hoe, no time is lost in stirring the ground effectually between the drills, as it is found that their growth is thereby greatly accelerated. They will now soon be ready for striking with the common hoe across the drills, for the purpose of thinning the plants. This ought to be done by an experienced man, followed by a boy or girl, to leave single such plants as he may not have been able to separate with the hoe. The usual distance at which the plants are left apart is from 9 to 12 inches; and a hoe of a size not less than 9 inches should be used, if the plants are to have sufficient space in which to develop themselves. This work is frequently performed by the piece, at about 4s. the acre, and cannot be done for less to allow fair wages. In a few days afterwards, a second horse-hoeing will be required, and not improbably a third, as well as being gone over a second time by the hand-hoe, although at much less expense than the former one, the object of this latter hoeing being chiefly to eradicate any weeds which may remain.

The season for sowing the common turnip in its several varieties is from the middle of June to the middle of July, although they are sown as late as August on land which has grown a previous crop of tares. These late turnips, with good management, form the most nutritious feed for the lambing ewes during the early spring season. A mixture of "white globe" and "purple-top white" is often sown for early feed in the autumn. The "green globe" is an excellent kind to succeed, and possesses this advantage, that it will bear the winter nearly as well as the Swedish turnip itself. The routine of cultivation for the common turnips is similar to that pursued for the Swedes, excepting that they do not require the same high management that the latter do. Neither have they, in general, the same space allowed, either between the drills or the plants themselves.

Some prefer to sow them on the level furrow, and not upon ridges; such is Mr. Milwards' practice. After the land has been brought to a smooth surface, it is manured, and the manure immediately ploughed in by a common furrow. The seed is then drilled in, and also the tillage, by one of the large Suffolk drills, at a distance of not more than 18 or 20 inches between the rows. Drilling on the flat has two advantages over the ridge method. The hasty showers in summer do not run from the roots of the plants so easily as when sown upon ridges; and it also admits of the turnips being drilled much nearer between the rows, which in the white turnip is of service, inasmuch as where upon ridges only three rows could be had to secure the benefit of covering the manure better, (which is the principal advantage possessed by the ridge system,) four may be included in the same space; and although the turnips may be smaller in size, they are of far better quality. The horse-hoe may be used within drills of 18 inches, but not at less, without danger of injury to the plants. Two pounds of seed is generally thought enough of the common turnip to the acre.

The early-sown turnips are generally ready to stock during the month of September, which is mostly done by turning lambs upon them. These have been previously taught by the ewes to eat linseed-cake, and have an allowance of a quarter of a pound each until Christmas, which is then increased to half a pound, if they are intended to be sold fat in the spring; a practice followed now very often, at least as regards the wethers. The choicest gimmers are more frequently reserved for breeding ewes; a proportion of one fourth or one fifth being supplied each year, by which means the flock of ewes is always young.

(To be continued.)

THE SOUNDS OF INDUSTRY.

BY FRANCES D. GAGE.

I LOVE the banging hammer,
The whirring of the plane,
The crashing of the busy saw,
The creaking of the crane,
The ringing of the anvil,
The grating of the drill,
The clattering of the turning-lathe,
The whirling of the mill,
The buzzing of the spindle,
The rattling of the loom,
The puffing of the engine,
And the fan's continuous boom—
The clipping of the tailor's shears,
The driving of the awl—
The sounds of BUSY LABOR,
I love, I love them all.

I love the plowman's whistle,
The reaper's cheerful song,
The drover's oft repeated shout,
As he spurs his stock along;
The bustle of the market man,
As he hies him thro' the town;
The halloo from the tree top
As the ripened fruit comes down.
The busy sound of threshers
As they clean the ripened grain,

And the huskers' joke and mirth and glee
'Neath the moonlight on the plain;
The kind voice of the dairyman,
The shepherd's gentle call—
These sounds of active industry,
I love, I love them all.

For they tell my longing spirit
Of the earnestness of life,
How much of all its happiness
Comes out of toil and strife:
Not that toil and strife that fainteth,
And murmureth all the way—
Not the toil and strife that groaneth
Beneath a tyrant's sway;
But the toil and strife that springeth
From a free and willing heart,
A strife which ever bringeth
To the striver all his part.

Oh! there is a good in labor,
If we labor but aright,
That gives vigor to the day time
And a sweeter sleep at night;
A good that bringeth pleasure,
Even to the toiling hours—
For duty cheers the spirit
As the dew revives the flowers.

Ohio Cultivator.

THE GREAT GRAIN MARKET OF THE WORLD.

THE WHEAT CROP OF 1851.—The reports from the various grain-growing parts of the Union, indicate that the wheat crop of the present year will be the heaviest ever taken from the earth in the Western States. In Ohio, the crop is a very large and fine one. In New-York, Indiana, Michigan, and Wisconsin, the yield is also very large, and the wheat of the very best quality. In Michigan, particularly, the yield exceeds any thing ever known even in Michigan.

The tariff of 1842 created a market for far more than one hundred millions of dollars worth of food among the men who opened the mines of coal and of ore, and who mined that coal and that ore, and built the furnaces that smelted the ore which gave us in 1847 six hundred thousand *additional* tons of home-made iron; and among the men who built the cotton and woollen mills, and the men who made the cloth from two hundred and fifty thousand *additional* bales of cotton, and thirty millions of pounds of *additional* wool; and among the men who made the spindles, and the looms, and the clothing, and the furniture, and the books, and the newspapers, for this vast body of consumers of the raw products of the earth.

The tariff of 1846 has closed and is daily closing the mills and furnaces of the Union, and mills and furnaces have ceased to be built. Instead of increasing the domestic market for food, we have diminished it to the extent of one hundred and forty thousand bales of cotton, and twenty millions of pounds of wool, and four hundred thousand tons of iron, equal to more than fifty millions of dollars; and what have we gained in return? In the year 1846-7, we not only fed all the laborers and mechanics employed in producing that vast quantity of cloth, and iron, and coal, but we exported food to the enormous amount of sixty-three million dollars. Last year, the export was twenty-seven millions, and yet in the mean time we had driven our whole increase of population, amounting to more than two millions, into agriculture.

We now invite the attention of the farmers of the Union to the fact that the average price of flour is but four dollars per barrel, with a daily tendency to decline, and that wheat is now selling in this neighborhood for eighty cents a bushel, and that it is only on condition of selling at those prices they can have any foreign market at all, for the average price of wheat in England for the first few months of this year was but 4s. 2d., or one dollar per bushel of sixty pounds. Forced to sell at these prices, this wheat and this flour go abroad, and to what extent they may see by the following statement of the export trade of those articles for the eleven months of the last harvest year:—

BREADSTUFFS.—The following is a statement of the exports of Flour, Meal, and Grain, from the United States to Great Britain and Ireland, from the 1st of September last to the latest dates:

	FLOUR, bbls.	MEAL, bbls.	WHEAT, bush.	CORN, bush.
New-York, ...	946,375	1,637	986,537	1,401,559
New-Orleans, ...	210,225			47,066
Philadelphia, ...	122,837	3,916	273,542	537,045
Baltimore, ...	67,508		26,451	133,644
Boston, ...	17,445			50,939
Other ports, ...	15,203			27,000
Total, ...	1,379,633	5,53	1,286,630	2,197,253
About same time last year, ...	392,742	6,086	432,929	4,813,373

The total value of these exports last year was little short of *six millions* of

dollars, and the total value of those of the present year is but about eight millions, and this trivial increase in the return is obtained by a diminution in the price of flour from about five and a half dollars to about four dollars. Any further increase is likely to be obtained, at the cost of a further and larger diminution in prices paid in the market we have obtained at the cost of the sacrifice of a domestic market for food that existed in 1846-7, to the extent of *at least fifty millions of dollars more than now*, and that would have increased at least a hundred millions of dollars in the time that has elapsed, had the tariff of 1842 been permitted to remain. It is time that the farmers and planters of the Union should learn that when they make a large market at home, *men come from abroad to buy*, as they did in 1847, and *that then they get the highest price*; and that when they do not make a market at home, *they themselves have to send or go abroad to sell*, as they do at present, and *that then they get the lowest price*.

The farmer who desires to know how to secure a large export trade for his products, should study carefully the following letter from Mr. William Brown, the free trade member of the British Parliament. It can scarcely fail to profit him:—

My dear Sir:—In sending you my remarks on your Aversham speech, I write to you not only in the character of a merchant, who has had transactions all over the world, but in that of a landed proprietor, who, in common with other gentlemen interested in the soil, is desirous to support the rent rolls. I think it right to state this, that you may see that in our discussions I stand on mutual ground. * * *

Paradoxical as it may appear, I think *Great Britain is the largest grain-exporting country in the world*, although it is impossible to estimate accurately what quantity of grain, &c., is consumed in preparing £50,000,000 sterling (\$250,000,000 or thereabouts) in value of exports by which you so greatly benefit. *It is placed in the laboratory of that wonderful intellectual machine, man, which gives him the physical power, aided by steam, of converting it into broadcloths, calico, hardware, &c., and in these shapes your wheats find their way to every country of the world.*

Within this century alone this country has had use for 1,500,000 more manufacturers, merchants, and those depending on trade, than at any previous period. These, aided and assisted by our natural advantages, have found foreign markets for you every where. On the other hand, your prosperity is very important to the merchants and manufacturers, for they must cease to make and export goods, or to be able to use the agricultural produce of the country, unless they can find purchasers for their returns.

MOVING A PEAR TREE.

Z. B. PORTER, Esq., proprietor of the Cambridge Market Hotel, has furnished the *New-England Farmer* with a statement of a novel experiment tried by him recently; that of transplanting a large pear tree laden with fruit. The tree is of the Leperne variety, 18 inches in diameter a few feet from the ground, 34 feet in height, and the distance through the branches in any direction is upwards of 30 feet. The quantity of fruit now upon the tree is estimated at two barrels.

The tree was moved a distance of 32 feet, in the following manner:—A trench in the form of a square, 12 feet on each side, was dug around the tree, to the depth of 3½ feet. A box of plank was built around the earth thus left adhering to the roots, and, by working in planks at the sides, a bottom was formed to the box, which thus completely encased the roots of the tree. A canal was dug from the tree to the place to which it was to be moved, of sufficient width and depth to admit of the passage of this mass of earth, and the tree—with the body of more than 500 cubic feet of earth, and estimated by good judges to weigh 25 tons—was safely deposited in its new location.

No roots were found in digging around or under the tree. The time occupied in moving it was forty minutes; expense \$50. The tree stood upon the spot selected for the location of the Cambridge Market Bank, and was moved by Mr. James Mellen, of Cam-

bridge, at Mr. Porter's request, to preserve the tree, and make room for the erection of that building.

The *principle* involved in the foregoing is not a new one. Removing large trees by digging round the bottoms, in the fall of the year, and transplanting them in the dead of winter, when the earth is frozen fast to the roots and fibres, has been practised for quite a length of time. The plank box, in the case of the pear tree, supplied the place of the frozen earth.—ED. *P. L. & A.*

THE REAPING MACHINE AND THE IRISH LABORERS.

A TRIAL of a few agricultural implements which have been shown in the great Exhibition, was made yesterday at Mr. Mechi's model farm, at Tiptree-heath. Col. Johnston of New-York was present on the part of the United States. The American reaping machines attracted much attention, but as the wheat was wet and unripe, only one machine worked to advantage. This was McCormack's. The *Times* sent a reporter to Tiptree, and he says that about the success of this machine, when tried under more favorable circumstances, there cannot be a doubt; and as to its advantages, they were sufficiently indicated yesterday by the loud cheers which burst from the large body of farmers assembled. The *Times* adds "that it is not a little singular that such an invention should come to us from America, where the shortcomings of the labor market have compelled people to look out for mechanical facilities in carrying out their harvesting operations. There it has been in existence for seven years, while we in this country have been going on from autumn to autumn, dependent for securing our crops upon armies of impoverished Irish peasants, who come to reap, and remain to fill our workhouses, swell our rates, and aggravate the moral and physical wretchedness of our surplus population." The *Morning Post* of to-day, referring to the meeting at Mechi's farm, and the trial of agricultural instruments, remarks of McCormack's machine, that twice did it go over the field, and, "without the slightest failure, cut the corn, leaving the stubble about the ordinary height, and throwing the several plants at the side of its path in heaps, just fitted for being tied up in sheaves. It is probable that some improvements and modifications of the details of this implement may be discovered, but its universal adoption must be a matter of certainty." "It must be obvious that, with this implement, the farmer obtains in a far greater degree a control over his harvest which he never had before; and the extra wages paid to Irish reapers will be saved. This machine has been in general use several years in America, and its introduction here is one of the most important helps which the farmer has lately received from machinery." These very critics, who now speak in such high terms of praise of this American machine, spoke of it with ridicule when it was in the Crystal Palace! When, however, they discover the practical utility of many of the American articles in the Exhibition, they are astonished at the ingenuity of the Americans. So McCormack's reaping machine will be awarded a first-class prize.—*London Correspondent of the North American.*

In laying the above before our readers, we desire not only to invite their attention to the advantages to be derived from every where combining together to obtain the use of these admirable machines, and thus saving themselves from some of the loss now every where experienced from dispersion, in the deficiency of harvest labor, but also to the fact that the great reason for rejoicing at its introduction into England is found in the fact that it will enable that country to dispense in future with the "armies of impoverished Irish peasants" by whom the work of harvesting has thus far been performed. England discouraged by all the means in her power the growth of Irish manufactures, as she did, and is doing, with American ones. She forbade that the Irish artisan should take his place by the side of the Irish agriculturist. She would not permit the loom and the anvil to take their natural places by the side of the plough and the harrow. She insisted, as does now insist our late Secretary of the Treasury, Mr. Walker, that Ireland was an agricultural country, and that she must raise food and flax to be sent to England, there to be converted

into clothing, returning nothing to the land. Nevertheless, nature *would work*, despite of all discouragements short of British free trade, and Irish manufactures continued to make progress until the Union of 1801 gave them perfect free trade with England. From that time, the progress of the country has steadily been downward, and the poor Irishmen, reduced to agriculture alone, have been seen to be compelled to migrate in summer, almost by hundreds of thousands, to earn a few shillings in harvest time, with which to pay their rent at home. They yet lived, or rather starved through life, and they might have continued thus to live, but England gave them another lesson in free trade, sacrificing her and their agriculture to the spinners and weavers of Manchester. The effect of this is seen in the almost utter destruction of Irish agriculture. Reduced to live upon potatoes, the failure of that single crop brought starvation and pestilence, and the result of the British monopoly system called free trade is seen in the frightful fact, that instead of increasing at the rate of ten or fifteen per cent. in the last decennial period, the population has actually been so diminished by famine and pestilence as to be less than it was thirty years since. So frightful a fact might be supposed likely to invite attention to the cause of the deficiency in the demand for Irish labor, with a view to the restoration of that people to the enjoyment of their natural rights; but instead of this, we see her rejoicing in the fact that the demand for that labor is to be further diminished, and that the "armies of impoverished Irishmen" will be still further impoverished by the cessation of the demand for their aid in securing the harvests of the favored England. So heartless a system as that which looks to securing to that country a monopoly of the power to supply iron and cloth to the world—that looks to the making of England the great "workshop of the world"—has never before existed; and those who lend their aid to the perpetuation of its existence, as is now being done by the advocates of the tariff of 1846, must hold themselves responsible for its effects in the desolation of Ireland and India, and of every other country subject to the destructive system. To abolish it at once and for ever, and thus to restore to the people of the world the power to bring the loom and the anvil to the side of the plough and the harrow, needs but a brief effort on the part of this country, and that effort cannot fail to place it in a position of power and influence that it never can attain while it shall continue to lend its aid to the perpetuation of British power, and to compel its farmers and planters to exhaust their lands for the maintenance of British fleets and armies employed in dragooning the impoverished people of Ireland and of India.

MASSACHUSETTS APPLES IN CALIFORNIA.—It is stated that a cargo of Massachusetts apples, packed in ice, and in most perfect condition, was recently received in San Francisco. It is the first shipment of the kind which reached that place in good condition. A cargo of live hogs arrived there lately from the Sandwich Islands, and sold at twenty to twenty five cents per pound on foot, or thirty cents per pound when dressed. The same vessel brought 400 turkeys and 350 hens; the latter sold readily at two and a half dollars each.

A NATURAL BRIDGE IN ALABAMA.—Professor Toomey, in his recent geological exploration of this State, found a natural bridge in Walker county, about a mile from the main road, which rivals the celebrated one in Virginia. It spans about one hundred and twenty feet, while its height is about seventy. It is formed of massive sandstone, and is very symmetrical. The surrounding scenery is very grand, and lofty beech and hemlock trees growing on the bridge nearly shade it from the rays of the sun, and add to the wild sublimity of the spot.

F L A X A N D H E M P .

It is affirmed that not less than 46,000 acres of land in the State of New-York were sown with flax in 1849.—*New-York Journal of Commerce.*

The flax movement appears to progress steadily, and it would seem scarcely to be doubted that that fibre must, to a considerable extent, take the place of cotton. A recent Scottish journal, the *Glasgow Saturday Post*, says :—

We have now before us, we may mention, the product of a piece of coarse hemp bagging, in the various forms of fine flax, and we are sure that a glance at the articles referred to will be quite sufficient to satisfy any unprejudiced observer that the invention, when fully developed, is calculated to effect a surprising revolution in the spinning and weaving manufactures of this country. In addition, we have also had handed to us a piece of fine lawn muslin, figured with flax cotton, and it is no exaggeration to say that the flowers have all the lustre and glossy appearance of silk. This, we believe, is the first time in which flax cotton has been used for the purpose of figuring fine muslins, and the result, we understand from practical parties, is most satisfactory and conclusive. We may just add, while noticing this subject, that independent altogether of the opinions which may be entertained as to the effect which the substitution of home-made flax for foreign-grown cotton is calculated to produce, we consider that the invention by which the material is animalized gives it a superiority over cotton, which cannot fail to secure its general adoption by parties engaged in the silk, woollen, and linen trade.

Attempts, we are informed, are now being made in France to introduce the culture of a gigantic sort of hemp, indigenous in China, where it is raised in large quantities, and is known under the name of Lo-Ma. Hitherto the French growers have not succeeded in bringing it to seed, though the stalks and fibre are produced by them in abundance. It requires a warm climate, and will not go to seed where it is too cold to raise olives. In Algeria it is hoped to raise it in perfection. In order to produce the seed, the plant must stand late in the season, say eight months from the time of planting. In France they plant it about the middle of April, and the fibre is ripe by the end of October, and is very long and beautiful; the yield is twice as great as that of ordinary hemp. It would be worth while for the agriculturists of Kentucky and the Southern States to look into the value of this plant. We see no reason why the fibre should not be raised in abundance in Kentucky; the seed would perhaps have to be produced still further south. It stands frost well.

It is surely time for the producers of cotton to reflect that their policy tends to place all the machinery for the conversion of cotton into cloth in the hands of the flax and hemp producers of the world, and to place themselves entirely in the power of men whose interests are directly adverse to their own.

DRYING PEACHES.—This delicious fruit when properly dried is exceedingly palatable and very much in demand. For this purpose the peaches should be gathered before they are mellow, pared, and (when small-sized peaches are used) simply split in two parts and laid on boards in a brick oven, after taking out the bread, leaving the mouth of the oven open to permit the moisture to evaporate. This is said, by a lady who has had much experience in drying fruit, to be the best method yet adopted. Six bushels of fresh peaches will make about one when dried.

TO BAKE APPLES.—Take sour apples, and to every square tin filled with them pour a teacupful of water and one of sugar. Bake them slowly until done. Eat them with cream and the juice which exudes from them. Nobody knows much of baking apples who has not eaten them in this way. No quince, peach, pear, nor plum preserves are equal to this simple dessert.

PORTER'S PATENT GRADUATING TWYERE FOR BLACKSMITHS' FORGES.

Our attention has been called to a patent twyere, which appears to be so much superior to any in use that it is with pleasure we notice it. It was patented by Mr. Robert D. Porter in 1849; and we have seen certificates from a great many who have it in use, some of them for three years, who say it is superior to any thing of the kind they have ever tried. Its advantages are:—

1st. The blast can be regulated effectually so as to suit any kind of work.

2d. The blast can be kept clear at all times without the use of a poker, or without breaking and shaking the fire, thus enabling the smith to take a clean clear heat.

3d. By actual experiment it saves one third of the fuel, while the work can be done one fourth faster.

4th. The blast is removed eight or nine inches from the back, which is a great advantage to the smith doing crooked or difficult work.

5th. It is not liable to get out of order, and will last for many years.

We have no hesitation in recommending it as a superior article, which should be in general use.

ANALYSES OF THE MUSKMELON (*Cucumis Melo*) AND THE WATERMELON (*Cucurbita Cetrullus*).

READ AT THE LATE SCIENTIFIC CONVENTION AT ALBANY, N.Y., BY J. H. SALISBURY, M.D.

The varieties examined were the Nutmeg Muskmelon, and the long, red-flesh Watermelon. The fruit only was examined. Length of Muskmelon, 6 inches; diameter 5½ inches. Length of Watermelon, 14 inches; diameter 6 inches.

PER CENTAGE OF WATER, DRY MATTER, AND ASH.

	Muskmelon.	Watermelon.
Per centage of water,.....	90.987	94.898
Per centage of dry matter,.....	9.013	5.102
Per centage of ash,.....	0.271	0.248
Per centage of ash in dry matter, ...	3.007	4.861

The muskmelon contains but a trifle more water than the beet. The watermelon contains more than the muskmelon and less than the cucumber. One ton of the fresh fruit of the muskmelon has 174.84 lbs. of organic matter, and 5.42 lbs. of inorganic matter. One ton of watermelon fruit, fresh, contains 97.08 lbs. of organic matter, and 4.96 lbs. of inorganic matter. 36,900 lbs. of muskmelons and 40,322 lbs. of watermelons contain each 100 lbs. of inorganic matter, or ash.

	100 lbs. Ash of Muskmelon.	100 lbs. Ash of Watermelon.
Carbonic acid,.....	11.55	11.42
Silicic acid,.....	2.20	1.21
Phosphoric acid,.....	25.40	14.93
Sulphuric acid,.....	3.90	1.63
Phosphate of iron,.....	2.30	4.52
Lime,.....	5.85	7.32
Magnesia,.....	0.60	1.31
Potash, ...	8.35	23.95
Soda, ...	34.35	30.63
Chlorine, ...	5.20	1.81
Organic matter, ...	trace	trace
	99.70	98.73

The muskmelon contains a large per centage of phosphoric acid and soda, and considerable potash. The watermelon has a very large per centage of soda and potash, and is

also quite rich in phosphoric acid. The occurrence of these bodies in such quantities in those plants explains to us why dead animal matter, as flesh, bones, &c., common salt and ashes, have such a marked influence in promoting their growth and productiveness.

PROXIMATE ORGANIC ANALYSES OF FRUIT.

	100 lbs. Muskmelon		100 lbs. Watermelon.	
	Fresh fruit	Dry fruit.	Fresh fruit.	Dry fruit.
Albumen, ...	0.918	10.219	0.572	11.403
Casein, ...	0.442	4.952	0.004	0.080
Dextrine, ...	1.142	12.800	0.318	6.340
Starch, ...	trace	trace	none	none
Sugar and Extract, ...	5.250	58.942	3.020	60.267
Chlorophyl, ...	0.004	0.044	0.006	0.120
Fat, wax, and resin, ...	0.038	0.418	0.022	0.440
Citric acid, ...	trace	trace	0.007	0.140
Malic acid, ...	0.007	0.077	0.009	0.180
Tartaric acid, ...	0.005	0.055	trace	trace
Fibre, ...	1.123	12.393	1.058	21.030
Dry matter, ...	8.929	100.00	5.016	100.00
Water, ...	90.987		94.898	
	99.916		99.914	

The large per centage of albumen, casein, dextrine and sugar, with a small quantity of acid, shows us the reason of the peculiar rich flavor of the fruit of the melon.

ULTIMATE ORGANIC ANALYSES.

100 parts of dry fruit of the yield of Nitrogen, ...	Muskmelon,	Watermelon,
Oxygea, ...	43.905	43.187
Carbon, ...	44.820	43.764
Hydrogen, ...	6.832	6.872

The melon furnishes a mild but very pleasant liquor. For this use the Muskmelon is much superior to the Watermelon.

CUTTING STRAW FOR CATTLE.

FARMING, as yet, is in its infancy. The farmer is just beginning to see that something must be done to meet the exigency of the times; the woful alteration in which has been brought about by the free-trade policy. If they have been thrown down on their backs, it is not the disposition of a farmer to lie there, expecting some one to help him up, but he jumps up and at it again. As a class, they are not to be excelled for grumbling and fault-finding; but then, willing they are to conform to the wishes of their rulers, and hence the farmer is generally found ready to perform his part truly and well in the national drama.

Chopped straw, in some of its combinations, is now beginning to be found the best and most economical food that can be used for the cattle on a farm, and by which the largest number of animals may be kept on a given quantity of food. It is greatly to be wondered at that the chopping and cooking system does not make more headway than it really does, when we consider the advantages to be derived from it. But many farmers are apt to look on any thing modern with an air of distrust, and are afraid to try the experiment; time, however, changes all things, and we hope to see the day when the farmer will have all the food cooked for his stock, for the same reason that he now cooks his own. Many intelligent farmers are already beginning to acknowledge the benefits of this method of treating the food of their fattening cattle, and say that the stock thrive on it and gain more weight in a given time, with the same quantity of food, than they do by the ordinary method. If such is really the case, that fattening cattle do so remarkably well on it, the lean stock must do the same. The point chiefly to be considered, then, is the labor in boiling and preparing the food in the proper manner. A man will cook food sufficient for twenty-four head of cattle for one day in six hours, the chopping being merely a secondary consideration, where steam-

power is employed. The best method of cooking is that where steam is used for heating the receptacle in which the food to be cooked is placed, as it prevents the possibility of the food getting in any degree *pan-burnt*, or "set on." The steam is supplied from a boiler, similar to that of a steam-engine, by a pipe, and traverses round the pans in which the food is placed. These pans are made the one within the other; the steam enters betwixt them and fills the space, thus heating the whole regularly and speedily, without fear of burning the food. The outer pan has a hole in the bottom, furnished with a stop-cock, so that the condensed steam can be let out or retained at pleasure. The whole is exceedingly simple, and can be worked almost by a child, without fear of accident. The animal, when its food is chopped and cooked in this manner, has not to spend half its time in masticating tough straws, but it can fill itself sufficiently in a short space of time, and then lie down to rest, and digest the food swallowed. The manure dropped is also greater in value than by the other method, and the whole will amply repay the farmer for the additional expense incurred in preparing the food. What is good for one must be good for many; if the cutting of food be good for cattle, it must, and is acknowledged to be, for horses, (for draught horses especially,) as they sooner fill themselves on chopp, than having to pull their provender from the rack; the whole is also clean eaten up: there is no waste, as there is when the food is uncut. Whoever will take the trouble to try the experiment, will find that, out of the uncut hay or clover given to a horse, one-fifth, at the very least, is wasted, and the animal not doing so well. It is the opinion of some, that, if the whole of the straw and hay grown on the farm, with just sufficient of the former preserved for thatching, were converted into chaff, the improved condition of the manure would amply repay for the additional expense in cutting it, and with great show of probability, besides keeping double the quantity of stock. If we take the trouble to examine the farm-yards where the straw is uncut, we shall find the litter which has been deposited in it to be saturated with wet, and mixed with a very small portion of dung dropped by the animals, and that is all: it is in alternate layers of red and black, as the straw given out has been oats or barley. No person would suppose, for a moment, that it is fit to put on the land in this state, so it is carted into a heap to decompose—in the act of decomposition throwing off a large quantity of ammonia and valuable gases, which would be incomparably better retained. When it is distributed over the land, after being fermented, there is very often a great deal left uncovered and exposed to the action of the wind and sun, which extracts the few remaining particles of goodness out of it, so that nothing remains which will in the least contribute to the building up the structures of the succeeding crop.

Compare, now, the chopping of the straw with this. The straw can be cut for a very little additional expense, by means of a straw-cutter attached to the thrashing-machine, which takes it when released from the latter, and reduces it to the lengths required—three inches for bedding, one and a half inches for food; this may be done by attaching an extra horse to the thrashing-machine, should the farmer not have steam-power at his command, and should his farm be too small to warrant the expenditure of so much money as a good steam-engine will cost. The same number of hands will do to work the machine as did in the ordinary method; for the man, or men, who removed the uncut straw will remove it when reduced to the lengths required. The stock may be greatly increased, because they will eat up almost every particle that is given to them, and thrive better on it too; the bedding gathers up and retains the urine and dung, and one-half the quantity of straw does for bedding when reduced to lengths of two or three inches, compared with what is given them in the state it comes from the thrashing-machine, leaving the rest for food. Every straw is rendered equally beneficial, and an air of tidiness is given to the whole of the farmstead, instead of having straws scattered about in all directions, and blowing all ways on a windy day, giving an idea of slovenliness to the whole building, which is very disagreeable. If any one will examine the manure of a fold-yard where the straw is all cut, he will find it of a quite different appearance to one where it is thrown out in its unchopped state. There is no need to remove manure out of the farm-yard until it is required to be laid on the land, thus saving the labor of loading and unloading. It can be drilled on the land with turnips to the greatest regularity by the aid of the manure-drill now in common use, and by which the quantity to be laid on is determined with the greatest regularity; and, by being reduced into so much smaller particles by chopping, it more easily combines with the soil, without having to undergo the wasteful process of extreme fermentation in a large heap.

FRIED TOMATOES.—Tomatoes sliced and fried in butter are excellent. Tomatoes are fine in soups. Also, as every one knows, the best catsup in the world is made from them.

THE WAY TO CONVERT CONSUMERS OF FOOD INTO PRODUCERS OF FOOD, AND TO DEPRESS THE PRICES OF ALL THE PRODUCTS OF THE EARTH.

THE *Fishkill Standard* contains an official notice from Robert G. Rankin, of Poughkeepsie, and Josiah Carver, of Matteawan, announcing that they have been appointed assignees of the Matteawan Company. The deed of trust requires them, in the first place, "to pay all the just debts and demands due and owing by said company to their laborers, servants and apprentices, for their services and money loaned by them to said company; in the next place, to pay and satisfy all other persons their just debts and demands against said company, ratably; and lastly, if any surplus be left after fully paying and satisfying the just debts and liabilities of said company, to pay such surplus to said company." The *Standard* says that it is the intention of the assignees to continue the works in operation for a sufficient time to finish up the materials on hand, in order that any unnecessary loss may thus be prevented as far as practicable.

Thus, one by one, are all the great domestic markets being closed, and with each successive failure there is a diminution in the domestic consumption of food, and wool, and cotton, notwithstanding the growth of population.

DRYING FRUIT.

A correspondent inquires for a description of the best mode of drying fruit. While so much attention is given to the cultivation of fruit, there still exists a great deficiency in good, cheap, and expeditious methods of drying, which, by converting perishable property into a condition for long keeping and easy transportation, may greatly increase, both in extent and profit, the culture of the highest flavored sorts.

Dried apples and dried peaches already constitute a considerable article of commerce. But their quality is immeasurably inferior to that which might be attained. The same difference in flavor exists between unpalatable seedlings and the most highly improved grafted variety, whether they be fresh or dried. Yet the poorest apples are usually selected, simply because the dried fruit is bought by the pound, and not for its excellence. Late or inferior peaches are chosen, because their owners have no other use for them; when, besides the inferior flavor of the late seedlings so largely used, the cool damp weather to which they are exposed while drying does the work in a very imperfect manner, and a half-decayed flavor is often mingled with that of the fruit itself. If dried at all in the open air, it is of much consequence that early sorts, both of apple and peach, be selected, that the benefit of a hot sun may be secured. Why is it not as easy to plant and raise early prolific sorts, that will ripen at a time when two days of hot sun will dry them, as later sorts, which will scarcely get dry at all in the open air?

A good and faultless mode of using artificial heat appears not to have been yet practised. The great and existing deficiency is a want of a free circulation of the heated air. Hence the reason that the use of flat boards and shelves is usually attended with greater or less decay. Light wooden lattice-work is better, but imperfectly admits a free circulation, without making the slits too wide to prevent the dried fruit from falling through. Cheap netting or light twine is a still further improvement. An easy mode of making it is thus described by a correspondent of the *Michigan Farmer*:—"Take common carpet-yarn, warp it for two or three yards length, just as you choose; use a five or six quarters reed; in drawing through the reed, use every third or fourth space between the teeth of it; to insure strength, double your thread occasionally, and in weaving, beat two or three threads loosely together, and then more open, alternately; when taken from the loom, fasten it to a light frame, and it is ready for use." Frames covered with millinet would probably be found well adapted for drying the smaller fruits.

Rooms or buildings made for drying by artificial heat, must admit a very free ventilation. We have found that when fruit on lattice shelves is placed near a fire or under a stove, where there is no current of air, and where heat is imparted solely by radiation, it becomes heated without drying, for there is no current to sweep off the moisture about it. But when suspended immediately over the stove, where the heated air is constantly ascending, the process goes on rapidly and perfectly. When thus dried, it is nearly white in color, and retains its flavor unimpaired, and is incomparably better than a great

deal that we often see, which is brown with age, and spoiled with incipient decay, before the moisture is all expelled by the tardy process to which it is subjected.

The following would probably be a well-arranged drying-room for this purpose. Let the shelves, made of netting, stretched on frames, occupy the interior or central portion of the room, one above another, at free intervals, and leaving sufficient space for the person in attendance to pass freely round on every side, next to the wall. This would not only be more convenient, but admit a better circulation of air, than if the shelves were placed against the wall. The room might be heated with a small stove, the pipe of which should at first pass horizontally as near the floor as possible, and afterwards ascend to cause sufficient draught. This arrangement would heat the room far better than to place the pipe overhead, as is too often the case; the heat will rise through the whole height of the room, thus causing a circulation of air. The room must be well ventilated at each end near the top, to let off the vapor constantly arising; for even fresh cool air is better than a hot air charged with moisture. The ventilators may be covered with wire gauze when it may become desirable to exclude flies, wasps, &c.—*Albany Cultivator*.

PROTECTION THE TRUE AND ONLY MODE TO PERFECT FREEDOM OF TRADE.

AMERICAN SHAWL MANUFACTURE.—The Bay State Mills have recently sold 100 cases, numbering nearly or quite 5,000 shawls, *for the Canada market*, to a regular dealer there, who can afford to pay a duty of 12 per cent., and sell his goods alongside of British productions at a profit. The production of shawls from some of the principal mills the current year will be as follows:—James Roy & Co., nearly all long shawls of beautiful designs, 30,000; Bay State Mills, the great pioneers in this work, 385,000; Waterloo Co., 22,000; Empire State Mills, 30,000; Peacedale Mill, Duncan and Cunningham, and one or two smaller makers, say 25,000; making a total of 492,000, or nearly half a million of the medium and better class of goods, produced in this country in a single year.—*Newark Advertiser*.

The shawl manufacture has been protected, and therefore it is that we can manufacture shawls so cheaply as to be able to export them; that is, that we are enabled to export food and wool in the compact form of shawls, instead of doing it in the bulky forms in which they leave the hands of the farmer. Abolish protection, and the manufacture of shawls among ourselves will cease, for the demand for them will diminish as the cotton and woollen mills, the furnaces and mines, are closed, and the consumers of food shall every where find themselves driven to become producers of food, the customers of the farmer becoming his rivals. To produce any commodity cheaply, there must be large demand, enabling the producer to use good machinery, and when that demand ceases there is at once an end to all improvement, producing, ultimately, the abandonment of that which had once been deemed so perfect; because foreign rivals go on to make improvements which the domestic producer is unable to do. It is now clear that protection has diminished the price of shawls, for our manufacturers compete in Canada with the foreign manufacturer, at the same rate of duty; and equally clear must it be that it is *the latter that must pay the duty on all the shawls that he imports into our markets*. Abolish protection, and production will be diminished and prices will rise, and thus will the foreign producer compel the consumers to pay the duty.

MARYLAND AGRICULTURAL SOCIETY.—The citizens of Baltimore propose to raise by subscription, in shares of \$50, the sum of \$25,000, to be invested in a lot and improvements near that city, for the use of the Maryland State Agricultural Society, for ten years, as long as the annual exhibitions of the Society shall continue to be held therein.—*Valley Farmer*.

THE EFFECT OF THE AD-VALOREM SYSTEM UPON MORALS.

A FRENCH manufacturer of blankets lately consigned to this market an invoice of his manufactured articles to the value of 60,000 francs. Upon this, which must be taken here as the true market price of his commodities, he receives an export premium of twenty per cent., or 12,000 francs, in ready money. When the goods reach this port, they are entered at a valuation of 30,000 francs and passed at thirty per cent. import duty, or, in other words, 9,000 francs are paid to our Government—leaving the balance in the foreigner's favor of 3,000 francs, which he receives from his own Government to insure him against loss by competition with our mechanics. Now this is no fancy sketch, but a stern reality, which has been, and is being, carried on at our Custom House to the manifest injury of our mechanics; and if it be thus with the one article of blankets, is it not reasonable to conclude that it is practised and encouraged by a wise and considerate Government? Still, there are men who expect our mechanics to compete with a class of foreigners, who are not only protected by their own Government, but are encouraged to fraud in order to insure a heavy profit upon their manufactured articles. Can such delusions long endure?—*N. Y. Leader.*

EFFECT OF THE TARIFF OF 1846 UPON THE MERCHANTS.

PRICES, which were drooping during the whole of last fall and spring, when material and labor were advancing, have at length settled down to a point that leaves a heavy loss to those engaged in the production, and renders the business of the merchant any thing but satisfactory; for after exerting himself to the utmost, using all his eloquence, backed by the strong facts of cost of production and offers of extra time, it is impossible for him to realize a price that will save the consignor from loss.—*Exchange paper.*

The tariff of 1846 was the merchants' tariff. Its object was that of separating the consumer from the producer, and increasing the number of middlemen, but its effect has been only that of diminishing the number of exchanges to be made and increasing the number of persons employed in the business of exchange. Production diminishes, and the power to exchange is dependent upon the power to produce. Consumption diminishes, for those who cannot produce cannot consume, and they do not consume, and thus it is that the merchants suffer under the tariff of 1846.

SCIENCE AND AGRICULTURE.

MR. REVERDY JOHNSON, says the *American Farmer*, purchased, in 1848, a small farm near Baltimore, in the last stage of impoverishment. Such was its reduced condition, that the last crop of corn was not more than one peck to the acre. He states that all the vegetable matter growing on the two hundred acres of cleared land, including briars, sassafras, and other bushes, if carefully collected, would have been insufficient for the manufacture of one four-horse waggon-load of manure. He applied to Dr. David Stewart, of Baltimore, an able chemist, who rode out to the farm and procured specimens of the soil, which he carefully analyzed. He found that it contained an abundance of lime, potash, magnesia, iron, and organic matter, duly mixed with alumina and sand. One element only of a fertile soil was wanting, phosphoric acid; and of this there was no trace. He recommended an application to the soil of biphosphate of lime, a preparation of bones, as the best mode of supplying the deficient element. The remedy was given, at an expense of ten dollars per acre. It was the one thing needful. Health was restored to the exhausted patient, and the grateful soil yielded last year twenty-nine bushels of wheat per acre to the proprietor. Nothing else was applied, indeed nothing else was wanting. Here was a beautiful triumph of science. There is no doubt about

the facts; the experiment came under the observation and attracted the attention of hundreds. It was detailed to the writer by Mr. Johnson himself, and various others worthy of perfect reliance.

WHICH IS THE RESTRICTIVE POLICY?

THE American Democracy are for appreciating the prices of labor and for diffusing the wealth of the country among the greatest possible number of its inhabitants. They believe that, with the protection which is incidentally afforded by a tariff of revenue, and the cost of transportation, our manufacturers can meet the foreign competition on more than equal terms. They believe, too, that in a country of such diversified interests as this, that protection for sake of one branch of industry in one section of the Union, detrimental to other branches of industry prosecuted in other parts, is unjust and not sanctioned by the Constitution. They also believe, that the more unfettered the whole industry of the country is, the better for the people and the country, and that as the agricultural is the main branch of industry, it should not be restricted in its markets. These are a few of the reasons which induce the American Democracy to oppose the ultra high tariff notions of the *Tribune* and its party.—*Cincinnati Inquirer*.

If our contemporary *believes* that the present revenue tariff, with the cost of transportation, is protection enough for our manufactures, we should like to understand why it is that so many furnaces and mills have been shut up under its working? Or if it appreciates wages and diffuses wealth among the greatest number, why the consumption of iron and cotton in the country has fallen off? Also, how protection, which creates a home market for the more perishable products of agriculture, that would otherwise have no market at all, favors manufactures at the expense of farming or any other interest? Also, whether the markets of the farmer are more restricted when he can find in his own neighborhood a ready demand and ready pay for his vegetables, milk, veal, &c.; or when he has to send to England to find a precarious and shifting demand for wheat, cheese, hams, and other heavy articles which can be transported, most of which exhaust the soil without making it a return?

To our thinking the restriction is really on the side of the bastard Free Trade, advocated by the *Inquirer*.—*New-York Tribune*.

From the Wool Grower.

PEACH LEAVES *versus* SHEEP.

It may not be known that peach leaves are poisonous, and often prove fatal when eaten by animals. A few days since, in Western New-York, we witnessed the deaths of two sheep, caused by eating freely of peach leaves. The peach is a native of Sicily, we believe, and was originally poisonous; but, by cultivation, has become one of the most delicious of fruits. The leaves, however, are said to contain prussic acid. Sheep should never be allowed to run in peach orchards. Several cases have occurred in which cattle and sheep have been poisoned by eating the leaves of the wild cherry. The tame cherry is equally poisonous. It has been said that cherry leaves are free from poison until the leaves have wilted; but cases have been known in which the green leaves have proved poisonous and fatal to animals.

In the cases we witnessed, the sheep exhibited vertigo and trembling, and frothed at the mouth, and evidently endured much pain. After several hours had elapsed, a noble lamb, belonging to one of the poisoned sheep, came up and called out urgently for his supper. The sick and dying mother raised her head, and turned and looked piteously at her offspring, crying with hunger. Nerved with a spirit of maternal affection, she struggled and gained an upright position, and with much difficulty maintained it and gave nurse to the bleating lamb. This done, she lay down and died instantly; and we presume in peace.

Various remedies have been suggested. A writer in the *Massachusetts Ploughman*

recommends a pint of New-England rum, mixed with a pint of molasses, and given to each grown animal; one third of the quantity for a sheep. Salt would doubtless be beneficial, as it is useful in cases of poison from the bite of snakes, the sting of bees, &c. A gill of sweet oil, castor oil, lard or fresh butter, given in a pint of new milk, it is said, will sometimes effect a cure. Most vegetable poisons, however, are acids, and require alkalis to neutralize them. Ammonia, lye of wood ashes, and pot and pearl ashes are used for the purpose.

One word in reference to the management of stock bucks. It has within a few years been materially changed. Formerly the buck was turned in with a flock of ewes, and ran with the flock through the tupping season.

The objections to this course are, that it proves injurious to the buck; and many of the lambs are small and feeble. Experience has shown that when the buck is kept up and tended, the above objections are obviated. It has been said that one service is preferable; but the best flock-masters in this section now agree that a single service is not in all cases sure, and that the buck should be allowed to serve each one at least twice, during the few weeks of the tupping season. When all have been thus served, let the buck and ewes together for a few days, which will generally render the matter sure, and give as many lambs as there are ewes in the flock.

S. B. ROCKWELL.

Cornwall, Vt., July 15, 1851.

CACTUS GRANDIFLORA—THE NIGHT-BLOOMING CEREUS.

THE editor of the *New-Orleans Crescent* recently received a most rare and beautiful gift, a flower of this plant in full bloom. These flowers, says the *Crescent*, are rarely seen, as but few plants in this moist climate come to perfection. We accompanied the gentleman to the garden where the plant was in bloom, and which was completely covered, there being not less than eight in their perfection. They began to open a short time after sunset, and at nine o'clock they were in full bloom. The flowers look more like gigantic water-lilies, only much more delicate in their structure; the stamens form a most beautiful plume, in grace and beauty recalling the crest which adorns the necks of some varieties of the crane. The perfume is that of vanilla. Perhaps the sense of the beautiful was more intense from the reflection, that before morning these flowers must fade. The gratification to the eye was as perfect and as brief as one of Jenny Lind's concerts is to the ear. The flower which we were so fortunate as to obtain was immersed in a glass jar of alcohol, and will, we hope, grace our sanctum for many months. This plant did not bloom in the precincts of any costly, luxurious garden, but is in the little patch of a hard-working Dutchman, who finds time enough to gratify his taste for flowers, and in this piece of ground, not much larger than a blanket, he has collected many beautiful specimens. Unlike all other exhibitions, no solicitations of friends can induce Signora Nature to repeat the performance till next summer. But we shall give our readers timely notice of the next appearance of this gorgeous flower.

WOOL GROWING IN VIRGINIA.

At the present time, says the *Richmond Whig*, when the attention of the people of our Northern States is turned to Virginia, as offering a fine field for investment in her lands for agricultural, mining and manufacturing purposes, it may not be amiss to point out the many advantages possessed by a very large portion of the State for the wool growing business. This subject has been brought to my mind by seeing the fact stated, in many newspapers, that, out of one hundred parcels of wool collected by an extensive wool dealer at the North, from various parts of the United States, for exhibition at the World's Fair, the palm was awarded to a parcel grown by Messrs. Patterson, on their sheep grounds, in Bedford county, Virginia.

The whole tier of Piedmont counties, immediately under the Blue Ridge, from the Potomac River to the North Carolina line, namely, Fauquier, Orange, Albemarle, Bedford, Patrick, and all intermediate counties, have been fully proved, by a few northern wool growers settled in them, to be most admirably adapted to this business; the most suitable grasses for sheep grow finely. Diseases incident to this animal are of seldom occurrence, and the wolf, that deadly foe to the sheep, is rarely ever seen. Franklin, Henry, and Patrick, the least opened of this range of counties, contain very few if any wolves. These three counties offer, on account of the low price of land and the absence

of all ravenous wild animals, a great opening for sheep grazing. Large tracts of uncleared land are to be had there on mountains and hill-sides, for perhaps less than fifty cents per acre, which, if partially cleared of its undergrowth, (that the rays of the sun might strike the earth,) would put forth grass spontaneously, and make excellent ranges for sheep.

STRAWBERRIES.

THE *New-England Farmer* describes a few of the varieties of this delicious fruit which are desirable for cultivation; and so valuable is it that every one who has room in his garden should raise it for his own family, at least, unless he is fortunately in a region where the delicious wild strawberry abounds. It requires but little attention, and a single bed four rods long and one wide will with a fair crop produce about four quarts of fruit every day for about twelve days and in some seasons twice that quantity may be obtained. It is healthy and delicious, and its cultivation should not be neglected by a single individual who has a square rod of ground to spare.

As a guide to those who are unacquainted with the different varieties, we subjoin the following table, showing the time of ripening of the different kinds:

Early Virginia,	June 22	Black Prince,	June 27
Large Early Scarlet,	" 22	Hovey's Seedling,	" 28
Boston Pine,	" 26	Fay's Seedling,	" 28
Wiley,	" 26	Wood, or Alpine,	July 1
Jenney's Seedling,	" 27	Milford Native,	" 4

The time named is when the fruit began to ripen, and generally, it continued about one week. Jenney's continued in use nine or ten days. This table agrees very nearly with previous experiments, and with the experiments of many other cultivators, in the comparative time of ripening, which is the main subject in view, as it shows the inexperienced how to select so as to have a succession of fruit.

Early Virginia.—This is the best early strawberry generally known in this season. It is one of the principal kinds for main crops, and some cultivate it almost exclusively. The plants are very strong, vigorous and hardy, enduring the cold of winter, and succeeding well on dry soils, as well as on those rather strong and heavy. The fruit is medial size, very handsome, and of excellent quality, which it retains well after picking. It sells well in the market the next day after it is picked. It is very productive. We have accounts of its yielding some of the largest crops ever produced from any variety. It is nearly perfect in its blossom, and is a good variety to fertilize pistillate kinds.

Large Early Scarlet is the same as the above.

Boston Pine.—This fruit seems peculiarly adapted to strong soils; and under high culture, planted in hills, or the plants well thinned, it yields large crops; but if the plants are thick, it sets more fruit than it can perfect. The plants are strong, vigorous, productive and hardy, enduring our cold winters well. The fruit is quite large, beautiful, and of a sweet, pleasant flavor, as taken from the vines. Some prefer it for its mildness; others give a preference to sub-acid fruits, which in the hot season are admirably adapted for the table, with a little sugar.

Wiley.—This is a female strawberry in Ohio, producing large crops of excellent fruit. The plants are remarkably vigorous, hardy and productive. The fruit is tolerably large, and of excellent quality. It is very promising and worthy of trial. Mr. F. R. Elliott, Cleveland, Ohio, a well-known pomologist, raised of this variety 1,345 quarts on one fourth of an acre of land.

Jenney's Seedling.—This is a new variety, not yet cultivated to much extent, but it is very promising indeed. The plants are strong, vigorous, productive and hardy, enduring our winters without injury. The fruit is large, very handsome, and of a very high quality. It is sub-acid, but as the strawberry is usually used with sugar, and in hot weather, a little acid mingled with sweet is very acceptable. Time must determine its merits for the market. Mr. Jenney raised, on one fourth of an acre, at the rate of more than 4,000 quarts to an acre. This plant is mostly pistillate, but we believe it yields good crops without a fertilizer.

Black Prince.—Some praise this highly, others condemn it with severity. It has a peculiar flavor, that is pleasant to some, and to others it is offensive. Some amateurs will cultivate it, but we do not think it will be valuable for the market.

Hovey's Seedling.—This is one of the most valuable of strawberries. It has not the vigor and hardiness of the Early Virginia, Wiley, and Jenney's Seedling, but it usually

endures our cold winters well. When it produces a very great crop, the plants are sometimes thin the next season, either from the effects of the winter or from exhaustion. The size of the fruit is extremely large, the color is beautiful, and the flavor is mild, rich, and excellent. This variety is remarkably productive, and owing to its large size, and the readiness with which the fruit parts from the hull, it is picked with less expense than any other variety.

Flax's Seedling.—We prefer Hovey's or Jenney's to this, and they ripen about the same time.

Wood, or Alpine.—This is an old variety, which held an important place as a late strawberry before the introduction of Hovey's, and other late varieties.

Milford Native.—A good fruit, and very late; but neither vigorous nor productive.

BRITISH FREE TRADE IN INDIA.

LATE advices from Calcutta say, in consequence of the excessive heat and hot winds and absence of rain, the plant is dried and scorched up, and there is every probability of this year's crop not exceeding 75,000 maunds, in which case the consuming qualities will be worth, next year, in this market, 225 to 250 rupees per maund. When the news reaches England of a certainty of a short crop, prices will, without a doubt, go very high. The drought is so great that they have not water enough for the cattle, and the tanks have dried up. The heat is excessive, and the plant scorched almost to a cinder. They say it has not been such a hot season for fifteen or twenty years. Even should the rains come now, it will be too late to be of much benefit to the indigo. Indigo will be very high here the next year. The usual outturn is from 140,000 to 150,000 maunds; but the outturn last year was a short one, being under 120,000 maunds.—*Eng. Journal*.

Look where we may, we find the same results. Agriculture becomes productive as the consumer is brought to take his place by the side of the producer, and it becomes less and less productive from year to year, as the producer is compelled to depend on distant markets. Twenty years since, while the cotton manufacture still flourished in India, the *production of Bengal alone* averaged more than 120,000 maunds, and here we see that of all India reduced to 75,000 maunds. With the gradual decline of wealth the power of combination for the irrigation of the lands has diminished, and they have now, under the influence of British free trade, to complain that the country is "scorched up," and that their crops are ruined. So too complain the planters of Louisiana and Alabama, who see vast streams running by their plantations, useless to themselves and the world, when one half the labor now spent in seeking and clearing new plantations to take the place of those they have exhausted would place them beyond the reach of either droughts or inundations. The farmers and planters who have a market on the land for the products of the land grow richer and richer every day, but those who have not, grow poorer and poorer every day, for they are always selling off the soil which constitutes their capital.

GREEN BEANS AND PEAS IN WINTER.—We notice in our exchanges an article in regard to drying green beans for winter use, which is highly recommended as a new discovery, but which with ourselves is by no means new. Some years since, to save our "Lima" and "Cranberry" beans from a severe early frost, we had them all plucked in their green state, (the pods just filled,) and spread on linen cloths on the floor of an attic room, and carefully cured until they were perfectly dried. They were then gathered in baskets, and kept until the winter and following spring, and shelled as they were required for table use. The result was, the beans were as fine and palatable as when first taken from the garden. This method we have since followed with perfect success. In their preparation for cooking, nothing is required except simply soaking them in cold water two or three hours before boiling. Peas may be preserved in the same manner, but do not retain so much of their original sweetness and flavor.—*Farmer and Mechanic*.

CAUSE AND CURE OF SMUT IN WHEAT.

A CORRESPONDENT of the *Genesee Farmer* writes as follows, respecting the cause and cure of smut in wheat:—

I am an old farmer, have been in the business of cultivating wheat for more than thirty years, and I have heretofore raised a large quantity of smut. I have tried all the preventives I have seen recommended in the *Farmer*, without an entire cure; but for the last ten years have raised no smut. I will now state my former practice when I did raise smut, and my present practice, and hope other farmers will try the experiment, and I think they will give up the practice of steeping their seed wheat in any solution whatever; neither will they need a sieve to separate the large seed from the small; if it is ripe and sound it will not bring smut.

I will now say that I formerly harvested my wheat very green, or in other words before it was fully ripe, and made use of the same for seed, and from that seed I always raised plenty of smut. At length my "bump of causality" whispered to me, "You cut your seed wheat too green;" and from that time I have selected the part of my wheat field that ripens the evenest, and let it stand in the field until it is dead ripe, and until the heads are weather-beaten, and I have raised no smut since I followed the above rule.

Some seasons my wheat does not ripen even, and if I find a green head when I am cutting my seed wheat I throw it out; for I am fully of the opinion that a small unripe grain of wheat, if it vegetates at all, will bring smut. Such a grain contains but a very small particle of vitality; and solution of salt, vitriol, or lime will sometimes destroy that vitality, so that the grain does not vegetate; and here is where farmers are mistaken—they suppose they destroy the smut, when in fact it is the unripe, sickly grain, which produces smut, that they destroy. I say again to my brother farmers, try it, and my word for it you will not be sorry.

DELICIOUS FRUITS.

JOHN C. HODGES is taking the lead in the grape culture, as well as in that of the peach. He recently presented us with specimens of his white and black Hamburg, which are beyond question the best matured and most luscious grapes we have ever tasted. One bunch of the white weighed two pounds, and another one and a quarter pound. The berries are very large, well formed, and uniformly distributed over the bunch. The same is the case with the black. The vines are remarkably healthy and vigorous, and this is the first crop of grapes produced. Mr. Hodges is of opinion that he shall be able within a few years to prove that foreign grapes are not unsuited to our soil and climate. He has made a fair beginning in his demonstration, and if careful and skilful culture avail any thing, he will meet with entire success. Mr. Hodges' early freestone peaches have given place to other and later varieties of both free and clingstone. A basketful accompanied the grapes, all large and of the finest description. Not one is affected with curculio or other insect or disease. His success should encourage others to adopt a more careful system of culture; for while the ordinary kinds of peaches sell for three and four dollars per bushel, those similar to Mr. Hodges' would readily command seven and eight dollars.—*Alabama Planter*.

PROPAGATION OF THE RASPBERRY.

THE usual mode of propagating the raspberry is by suckers. As however but few of these are sent up annually to supply the place of the old canes which always perish after having matured the fruit, it must necessarily take a considerable time to multiply the variety to any extent.

It may also be readily propagated by layering. Cuttings strike with much difficulty.

But the best and most expeditious mode of multiplying the raspberry is by division of the roots. In this way it may be propagated with as much facility as the *Morus multiflorus*, or *Paulinia imperialis*. By pursuing this plan, I have, in one year, from a small plant, raised forty or fifty; and if I mistake not Mr. Robert Buist and Mr. James

D. Fulton have been still more successful. Admitting, however, that only twenty plants can be raised in this way in a season; then in the same ratio, in two years the produce from a single plant will be 400—in three years 8,000—in four years 160,000—and in five years 3,200,000.

The root of the raspberry is replete with eyes, visible or dormant. It may be divided therefore into very small portions. The best time to make the division is at the commencement of the winter or early in the spring. The pieces should be planted in small pots and placed in a cold frame—in a green-house at a low temperature—or in a room in the house without fire, but with a southern exposure. During the past winter, I have raised several hundred plants from root cuttings in rooms with a northern aspect, without fire, and where the thermometer sometimes was as low as 32° Fahrenheit. This plan, however, of propagating the raspberry, in a room where the sun never enters, cannot be recommended, as the solar rays are essential to a healthy and vigorous growth.—*Penn. Farm Journal*.

AGRICULTURAL RESOURCES OF CALIFORNIA.

THE San Francisco correspondent of the New-York *Tribune*, under date of May 1st, 1851, speaks as follows of the agricultural wealth of California:—

California has been regarded as mainly a desert, dotted with a few garden spots. But her agricultural resources are about being developed with astonishing rapidity. The high prices of vegetables, and fruits, and grains, is stimulating the tillage of the soil in every quarter. True, the dry weather presents an obstacle, but even the dry season does not interfere with the growth of at least *one* good crop per annum. We have hundreds of thousands of acres which you may plant with potatoes, simply ploughing them into the virgin soil without manure or previous preparation, and then, without the slightest tillage, you may gather from every acre three to five hundred bushels of the best potatoes in the world. The valleys of San José, Sonoma, and Napa, and scores of similar valleys, are garden spots that cannot be excelled in fertility and salubrity. There are now in this market beets weighing from twenty to forty pounds, raised in the first-named location from seed planted last August. These beets readily bring 15 to 20 cents a pound for table use, and they are sweet and tender. New potatoes have made their appearance, grown at the Mission near this city. Cabbages are common, and various other vegetables. In observing the numerous gardens near this city, and the great quantities of horticultural productions brought here by water from various points, sometimes hundreds of miles distant, one is surprised at the high prices they command. I saw lettuce to-day in fine order, just arrived from the Sandwich Islands. A large lot of sweet potatoes, in good order, from the same place, sold at auction for 3 cents a pound. The wholesale price of an article in this market has no strict relation to the retail; the retailer would probably sell at 8 to 12 cents.

Those who have seen the country in all the burnt-up barrenness of autumn can form no idea of its appearance in spring. Indeed, no one who does not see it can imagine the floral beauty of the landscape at this moment. Every spot of soil is covered with flowers. A few days since I stood on a hill, up which the city is climbing to the south, and turning my eyes southward, I could see with perfect plainness the yellow carpeting of flowers which covered the beautifully undulating country five miles distant—far beyond the Mission Dolores. On any of the surrounding hills, before you reach the city limits, you tread on a flower-bed. The Iris is in great profusion; the California Poppy everywhere spreads its bright yellow petals; the flowering Currant, the wild Lilac, the Beach Cactus, the yellow Violet, almost as beautiful as the Heart's-Ease, the Geranium Mallow, the Columbine, the Forget-me-not, and many other more delicate and humble species, mostly unknown to the Atlantic States, are lavishly distributed. About the middle of April I took a walk with a friend, and we counted no less than fifty-one plants in bloom, though our walk did not extend more than half a mile from the outskirts. A gentleman, who rode a few days ago about twenty-four miles over the plains near Sacramento City, describes the entire field as one gorgeous flower-bed. Such is the condition of one half of the surface of California at this moment. Will a soil like this refuse a profitable recompense to labor?

Your readers have heard of the gigantic cedars of the Pacific coast. They are found to the north, as you approach Oregon—near Humboldt Bay and the famous Gold Bluffs. It is hard to credit the stories which everybody brings home who goes there. A tree sixteen feet in diameter, and having a trunk two hundred feet in length, *beneath the*

branches, is of moderate size. I am assured that the largest are thirty feet in diameter. A friend of mine, Robert Lamont, Esq., of this city, informs me that he and his brother measured a tree near Humboldt, passing round it with a tape as high as they could reach, and found the circuit to exceed *ninety feet!* These monsters are apt to be hollow, and it is not uncommon to find them converted into human habitations. *Redwood* is the name commonly applied to this species of cedar, from the color of the wood, which is very soft, and has a remarkably straight grain, so that thin and perfectly even strips may be split off many feet in length. I should have mentioned that the entire length of the largest of these trees exceeds 300 feet.

In the same region raspberries grow to an inch and more in length, and strawberries also to an enormous size—of course I mean without cultivation. The soil of California is remarkably adapted to the cultivation of these fruits. In places near this city the ground is now white with strawberry blossoms, and the blossoms are much larger than any I have ever before seen.

MAKING MAPLE SUGAR.

THE sugar-maple is a beautiful tree, reaching the height of seventy or eighty feet, the body straight, for a long distance free from limbs, and three or four feet in diameter at the base. It grows in cold climates, between latitude 42 and 48, and on the Alleghenies to the southern termination, extending westward beyond Lake Superior. The wood is nearly equal to hickory for fuel, and is used for building, for ships, and various manufactures. When tapped as the winter gives place to spring, a tree, in a few weeks, will produce five or six pailfuls of sap, which is sweet and pleasant as a drink, and when boiled down will make about half as many pounds of sugar. The manufacturer, selecting a spot central among his trees, erects a temporary shelter, suspends his kettles over a smart fire, and at the close of a day or two will have fifty or a hundred pounds of sugar, which is equal to the common West India sugar, and when refined equals the finest in flavor and in beauty. When the sap has been boiled to a syrup and is turning to molasses, then to candy, and then graining into sugar, its flavor is delightful, especially when the candy is cooled on the snow. On this occasion the manufacturer expects his wife, children and friends, if near, to enjoy the scene.

IMMENSE FLIGHT OF GRASSHOPPERS.

ON Sunday, the 10th of August, says the *Reading (Pa.) Press*, at about 12 o'clock noon, a flight of grasshoppers passed over our city, continuing some three hours, and extending some miles to the east and west, which, in point of numbers, exceeded all computation. The sky was perfectly full, and in the rays of the sun myriads could be seen, looking like snow-flakes, moving about in circles, and apparently going southward. Some eight years ago, a similar phenomenon was observed.

A QUESTION.—The *Rochester Times* says: "We could never understand the reason why the man who sells a yard of cloth, or a hoe, or an axe, or a pair of shoes, is regarded by the community as a better or more respectable man than he who made it; nor he who sells a barrel of flour, or ships it off to another country, than he who raises the wheat from which it was manufactured. Will some one enlighten us on this subject?"

The reason is, that the commercial policy of nations is governed by middlemen, who stand between the producer and the consumer and enrich themselves at the cost of both. The trader produces nothing, and yet lives in a large house at a cost of five, ten, or twenty thousand dollars a year, while the farmer who produces and the artisan who consumes remain poor, and are happy if they can obtain necessary food and clothing. The object of protection is that of bringing the consumer to take his place by the side of the producer, and thus enabling them to dispense with the middlemen and to grow rich themselves. Protection looks to the elevation of all; British free trade to the elevation of the few at the expense of the many. The one is purely democratic, while the other is as purely aristocratic.

THE SONG OF THE RAILROAD.

BY C. T. WOLFE.

THROUGH the mould and through the clay,
Through the corn and through the hay,
By the margin of the lake,
O'er the river, through the brake,
O'er the bleak and drear moor,
On we hie with screech and roar!
Splashing! flashing!
Crashing! dashing!

Over ridges,
Gullies, bridges!
By the bubbling rill,
And mill—
Highways,
By-ways,

Hollow hill—
Jumping—bumping—
Rocking—roaring
Like 40,000 giants snoring!

By the lonely hut and mansion,
By the ocean's wide expansion,
Where the factory chimneys smoke,
Where the foundry bellows croak—
Dash along!

Flash along,
On! on! with a jump,
And a bump,
And a roll!

Hies the fire-fiend to its destined goal.

O'er the aqueduct and bog,
On we fly with ceaseless jog,
Every instant something new,
Every instant lost to view;
Now a tavern—now a steeple—
Now a crowd of gaping people—
Now a hollow—now a ridge—
Now a cross-way—now a bridge—
Grumble—stumble—
Ruinable—tumble—
Fretting—getting in a stew!
Church and steeple, gaping people,
Quick as thought are lost to view!
Every thing that eye can survey
Turns hurly-burly, topsy-turvy!
Each passenger is thumped and shaken,
As physic is when to be taken.

By the foundry, past the forge,
Through the plain and mountain gorge,
Where cathedral rears its head,
Where repose the silent dead!
Monuments amid the grass
Flit like spectres as you pass!
If to hail a friend inclined,
Whish! whirl! ka-swash!—he's left behind!
Rumble, tumble, all the day—
Thus we pass the hours away.

TO PRESERVE GRAPES FRESH.

A correspondent of the *Newark* (N. J.) *Advertiser* says, that for several years past he has succeeded in preserving Isabella grapes till March. "We have had the luxury of having fresh grapes all through the winter; and have found them very useful and refreshing to the sick, especially to consumptive people. We pick ours to preserve for the winter as late as we can and save them from the frost; gathering them when they are perfectly dry, say in the middle of a sunny day. We take a dry box—a common candle-box is very convenient for the purpose—first covering the bottom with cotton batting. We then put down a layer of grapes, one cluster after another, as thick as they can well lie. Care should be taken that no broken nor green ones are in the clusters. If there are, they will cause the others to mould and decay. We then put down a layer of cotton batting, and then another layer of grapes, till the box is full.

"Some have been at the trouble to seal the end of each stem with wax. We do not believe it is of any service. As the stems are brittle, it is necessary to handle them with a great deal of care. When they are thus laid down, much depends upon the place where you deposit the box. It should be placed in the driest and coolest place you have in the house."

PULVERIZATION OF THE SOIL.

THE fact that plants can only receive their food in a soluble state, cannot be too strongly impressed on the mind of the farmer. He should also be acquainted with the agencies which bring the crude elements into this state of solution. Hon. L. C. Ball, in an address before the Rensselaer County Agricultural Society, gave some good illustrations of this subject, in speaking of the "mechanical preparation of the soil." He explains the importance of this in reference to the preparation of soluble food for plants, and observes: "All these operations and results which I have endeavored to explain, take place nowhere else than upon the surface of the earth—in the presence of light, heat, air, moisture, and electric fluids, subject to the separate influence of each, and exposed to the combined action of all. At that moderate distance below the surface at which these influences cease to operate, all tendency to decomposition and decay, and all attempts at changes and alterations of form and substance, are arrested. The same elements are doubtless every where diffused, but they are locked up by the conditions of their original

combination, and will so remain until brought to the surface, and their prison-doors opened by some agent already free. Bury this piece of rock below the influence of heat and moisture, and unless thrown up by some convulsion of nature, it will remain there unchanged for ever. Place it upon a cultivated field, let it be turned by the plough, and exposed to the decomposing agents existing in the air and in the soil, until it is pulverized, and in a few years it will appear upon your table in some article of food, or upon your person in the garments you wear, or be sent to market in the form of beef and pork, and exchanged for tea and sugar, or silks and laces."—*Albany Cultivator*.

CATTLE SHOWS AND EXHIBITIONS.

New-York State, 16th, 17th, 18th, and 19th Sept., at Rochester.

Oneida, at Utica, 9th, 10th, 11th and 12th September.

Saratoga, at Mechanicsville, 9th, 10th and 11th September.

Essex, at Elizabethtown, 17th and 18th September.

Jefferson, at Watertown, Sept. 10th and 11th.

Seneca, 9th and 10th October.

American Institute, at Castle Garden, New-York, Oct. 1st, and will continue nearly through the month.

Ohio State Exhibition, Sept. 24th, 25th, and 26th.

Maryland State Exhibition, in Baltimore, Sept. 23d, 24th, 25th, and 26th.

Rhode Island State Agricultural, Horticultural and Mechanical Exhibition, at Providence, Sept. 10th, 11th, and 12th.

Vermont State Exhibition, at Middlebury, 10th and 11th Sept.

New-Hampshire State Exhibition, at Manchester, early in October, and will continue three days.

Massachusetts Horticultural Society, Sept. 16th, 17th, and 18th.

Worcester Horticultural Society, Sept. 17th, 18th, and 19th.

Worcester Cattle Show, Sept. 18th.

Middlesex, Conn., Middletown, Oct. 1st, 2d, and 3d.

Bristol, at Taunton, Oct. 19th and 20th. The exhibition of Stock on the 19th, and the

Ploughing Match and Dinner on the 20th.

Cattle Show and Ploughing Match, at Fitchburg, Sept. 25th.

Hillsborough, at Amherst, Oct. 1st and 2d.

Essex, at Salem, Sept. 25th.

The annual Exhibition of the Middlesex Co. Agricultural Society will be holden at Lowell, Sept. 24th. Simon Brown, Esq., Concord, Secretary.

Michigan, at Detroit, 16th, 17th, 18th, and 19th Sept.

Upper Canada, 24th, 25th, and 26th Sept.

Pennsylvania, at Harrisburg, 22d, 23d, and 24th Sept.

Georgia, at Macon, 29th, 30th, and 31st Sept.

 Secretaries of Agricultural Societies throughout the Union will greatly oblige the *Plough, Loom, and Anvil* by forwarding us information of the time and place of meeting of their several Societies, in time for public notice through our pages. Any other matter interesting to our readers will be gratefully received.—*Ed. P. L. and A.*

TO MAKE CORN OYSTERS.—Take three dozen ears of young and tender corn and grate it from the cob as fine as possible, and dredge it with wheat flour. Beat very light six eggs, and mix them gradually with the corn. Then let the whole be well incorporated by hard beating. Add a little salt. Have ready, in a frying-pan, a sufficient quantity of lard and fresh butter mixed together. Set it over the fire till it is boiling hot, and then put in portions of the corn mixture, so as to form oval cakes about three inches long, and nearly an inch thick. Fry them brown, and send them to the table hot. In taste they will be found to have a singular resemblance to fried oysters, and universally liked, if properly done. They are very good at breakfast.

TOMATO HAM.—Cut a slice of ham, with but little fat, an inch thick across the middle, peel and slice eight or ten red tomatoes and an onion; put all in together, covering close, and cook three-quarters of an hour; season with pepper.

THE PROFIT OF RAISING PORK.

It is always desirable for the farmer, says a writer in the *Wool Grower*, to know what profit, if any, he is making upon each branch of business pursued upon his farm. If it costs more to make pork than can be obtained for it in market, he had better produce no more, at least, than enough for his family supply. I have frequently inquired of my neighbors the cost of making pork, and the answer invariably has been, I do not know. The same emphatic "I do not know" is a stereotyped answer to all similar questions, propounded to a large class of farmers.

When a crop is prepared for market, we ought always to know what it has cost us per bushel to produce it. The same is true in relation to every thing raised upon the farm; we would then know what branches of farming afford the best return for the labor expended, and capital invested; that being determined, we could direct our labor accordingly.

Now for the profits of raising pork. In an agricultural journal, an eastern correspondent gives the following figures, which I transcribe for two purposes. The one is to show the profit of the business in his locality, and the other object is to institute a comparison between the profits of the Eastern farmer and those of the Western.

Cost of Pig, 50 lbs. live weight, 4½c., is.....	\$2.25
6 bushels of meal, 75c.....	4.50
13 do. do. 78c.....	10.14

\$16.89

Hog killed in Dec., weight 411 lbs., sold for 6¼c. per lb., amount \$26.71, showing a profit of \$9.58, or 58 per cent.

The cost in Michigan would have been as follows:—

Pig, 50 lbs. live weight, 2½c.....	\$1.50
19 bushels of meal, 40c.....	7.60

\$9.10

411 lbs. Pork, 4½c., is \$18.49, showing a profit of \$9.39, or 103 per cent. This exhibit gives the Michigan farmer a profit of 45 per cent. more than the Eastern.

ELECTRICITY.

It has now become very well known that the electric fluid prevades all nature, and that its properties are in many respects analogous to those of light and heat. It is probably identical also with the attraction of gravitation, and some have even supposed that it is one and the same thing with the vital principle. Electricity and magnetism are also one, and the opinion that it is the one universal force, of which all others are merely modifications, is rapidly gaining ground. The velocity with which the electric current travels along metallic wire is prodigious. Further observations may probably show that light and electricity are altogether identical.

The electric fluid pervades all matter, all bodies, and all space. The earth is full of it—some objects, such as metals, being better retainers of it than others. Some human beings are fuller of it than others, and possess the property of giving off sparks of electricity when in particular states of health. Many animals are highly electric; the cat, when rubbed before a fire, becomes an electric machine, and there are fishes and eels which communicate a smart electric shock when touched. They often use it to stun their prey or defend themselves against an attack.

NEW DESCRIPTION OF BRICKS.

MR. GREELEY in one of his London letters says: "By the way, the apostles of sanitary reform here are anticipating very great benefits from the use of hollow brick just coming into fashion. I am assured by a leading member of the Sanitary Commission that the hollow bricks cost much less than the solid ones; are a perfect protection against the dampness so often experienced in brick houses, and often so prejudicial to health. That there is a great saving in the cost of their transportation is easily seen; and, as they are made much larger than the solid brick, they can be laid up much faster. I

think Dr. Southwood Smith assured me that the saving in the first cost of the brick-work of a house is *one third*; if that is a mistake, the error is one of misapprehension on my part. The hollow brick is a far less perfect conductor of heat and cold than the solid one; consequently, a house built of the former is much cooler in summer and warmer in winter. It is confidently and reasonably hoped here that very signal improvements in the dwellings, especially of the poor, are to be secured by means of this invention. Prince Albert has ordered two Model Cottages to be erected at his own cost in Hyde Park, near the great Exhibition, in order to attract general attention to the subject."

SHADE AND ORNAMENTAL TREES.

THE "Silver Leaf Poplar" and "Silver Leaf Maple" are both deserving of a place in the lawn or pleasure ground. They possess the desirable properties of clean bark, large and beautiful foliage, with a speedy growth, and rapid development of head. The under side of the leaves have the appearance of having been plated with silver. When put in motion by a gentle breeze of wind, and the silver side turned up to the sun, the appearance is beautiful. The poplar forms a compact head without running very high; it shades a large space of ground, and does it well. The maple is more majestic in its habits, and requires a little shortening in of the branches for a few years. By this mode of treatment the head becomes compact, affording a better shade, and less liable to be injured by high winds. For street planting, the maple is preferable.

HINTS ON THE TREATMENT OF COWS.

Currying.—Cattle are well known to thrive much better where this operation is thoroughly performed; and Dr. B. Rush, in a lecture upon the advantages of studying the diseases of domestic animals, states that there is an improvement in the quality of the milk, and an increase in its quantity, which are obtained by currying the cow.

Be assured by experience of the truth of the saying, that "one cow well milked is worth two badly milked."

Curwen.—from three acres of grass, cut and fed to thirty milk cows 28 lbs. each day for 200 days. Their health was excellent, and their milk superior.

Milk Clean.—The first-drawn milk contains only 5, the second 8, and the fifth 17 per cent. of cream.

Kicking.—If the milker will keep his nails short, not one cow in a hundred will kick.

Sores.—An ointment made of linseed oil and white lead will cure cracked teats.

Drink.—Those who wish their cows to give large messes of milk in the winter season should give them warm drink. The extra trouble will be more than repaid by the increased quantity of milk.

In Milking be kind and soothing; the cow will give down her milk more freely.

Cream.—Do not milk so far from the dairy as to let the milk cool before it is put in the creaming dishes.

USE OF PLASTER OR GYPSUM.

MR. S. GRINNELL, of Exeter, Maine, in a communication to the editor of the *Bangor Whig and Courier*, makes the following observations on the use of plaster:—

I have been for some time trying experiments with plaster, for purifying the atmosphere about my out-buildings, cellar, &c., and the result of those experiments has amply remunerated me for my trouble; and feeling desirous that the public may be benefited thereby, I thought proper to lay the subject before your readers.

I first tried the use of plaster as a purifier in my cellar. In the spring there had been left in my cellar some decayed vegetables, such as turnips, potatoes, &c., and to the olfactory nerves the scent of the gases arising from them became very offensive. I removed all the rubbish, but still the scent remained. I then dusted the bottom of the cellar with plaster, after the manner of sanding the floor, when the atmosphere was instantaneously rendered perfectly pure. I then tried the experiment about my privy and hog-house, and with equal success. I then tried its use in allaying the stench about my

calf-pen, and stable where I was stall-feeding my oxen, and its effects were truly wonderful. I have found that the disagreeable effluvia arising from *carriion*, even, may be instantly allayed by the use of plaster. And the writer would confidently recommend its use about the slaughter-houses and meat-market, the atmosphere of which may be rendered perfectly pure, and with but trifling expense. And he has no doubt that the disagreeable scent arising from the bilge-water, &c., in vessels and steamboats, may be allayed in the same manner. Let all who would guard against contagious diseases incident to the warm season of the year, take every precaution by purifying their premises with plaster of Paris.

LIME COMPOSTS.

EXPERIMENTS with lime and earth, lime and weeds, &c., are too numerous to quote. Several special and important conclusions are established by the series made in the neighborhood of Edinburgh. From numerous trials, carried on for nearly forty years, it was demonstrated: 1. That the most effective and profitable mode of using lime was in a compound state. 2. That in the ensuing rotation, superior manuring became necessary, to render the part dressed with lime only equally productive with the portion to which the compost had been applied; and 3. That the effects of the compost were visible on all the crops of the rotation, but in a more marked degree upon the wheat.

In these cases, it seems that lime had been previously freely used, and had brought into use all the organic matter in the soil. The substances used in compost were scrapings of roads, ditch scourings, earth from headlands; and the proportion of lime was one to three of the other material. It was uniformly found that the crops in the course were as good, if not superior, to those grown with farm-yard manure instead of compost.

THE USE OF FRUITS.

THE *Boston Medical and Surgical Journal* says, that "instead of standing in any fear of a generous consumption of ripe fruits, we regard them as positively conducive to health. The very maladies commonly assumed to have their origin in the free use of apples, peaches, cherries, melons, and wild berries, have been quite as prevalent, if not equally destructive, in seasons of scarcity. There are so many erroneous notions entertained of the bad effects of fruit, that it is quite time a counteracting impression should be promulgated, having its foundation in common sense, and based on the common observation of the intelligent. We have no patience in reading the endless rules to be observed in this particular department of physical comfort. No one, we imagine, ever lived longer or freer from the paroxysms of disease by discarding the delicious fruits of the land in which he finds a home. On the contrary, they are necessary to the preservation of health, and are therefore caused to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their grateful, renovating influences."

NEW VARIETY OF SWEET POTATOES.—A gentleman residing in South Alabama, writes to a friend in Louisville, concerning a variety of sweet potato, supposed to be from Peru. He says: "It is altogether different, and much superior to any variety of this root hitherto known. It is very productive, and attains a prodigious size, even upon the poorest sandy land, and the roots remain without change from the time of taking them out of the ground until the following May. The plant is singularly easy of cultivation, growing equally well from the slip or vine, the top or vine of the full-grown plant being remarkably small; the inside is as white as snow. It is dry and mealy, and the saccharine principle contained resembling in delicacy the flavor of fine virgin honey."

A NEW VARIETY OF SHEEP.—The editor of the *Pioneer Journal* recently saw a new variety of sheep, a ram and a ewe, just imported from Africa, and intended to be conveyed to the fine sheep farm of M. B. Ives, Esq., of Potowomut. They came from the mountains about three hundred miles in the interior, from the east coast of Africa, and were a present from H. B. M. Consul in Zanzibar to a gentleman in Salem. The variety is entirely new, and quite unknown to naturalists. It is distinguished by the enormous fatness of the tail, and a singular dewlap, resembling that of cattle, and the absence of

horns in the ram. The wool is very coarse, more resembling hair than the article which is beginning to form so important a staple in the productions of our State; but in recompense of this, the mutton is said to be unrivalled in flavor and tenderness; and it is probable that by judicious crossings with our native breeds, a very important variety may be produced, sustaining or perhaps improving the well-known reputation of Rhode Island mutton, and not depreciating its fitness for wool.

IMPORTANT DISCOVERY—REMEDY FOR THE HYDROPHOBIA.—A vapor-bath heated to one hundred and seven degrees Fahrenheit, inducing copious and violent perspiration, is said, in a communication to the Paris Academy of Science, to be a certain remedy for this dreadful malady. It is the discovery of M. Buisson, who states that he has treated in this manner more than eighty persons bitten by rabid animals, in four of whom the symptoms had declared themselves, and in no one case has he failed, except that of one child. The mode of treatment he recommends is, to take a certain number of vapor-baths, (commonly called Russian,) and induce every night a violent perspiration, by wrapping himself up in flannels, and covering himself with a feather-bed; the perspiration is favored by drinking freely of warm decoction of sarsaparilla.

He declares, so convinced is he of the efficacy of his mode of treatment, that he will suffer himself to be inoculated with the disease, if required.

TOMATO SAUCE.—Pour boiling water on the ripe tomatoes, then slip off the skin and mash them; to every pound of tomatoes add an ounce of butter, season with pepper and salt, and simmer over a slow fire until they are thoroughly cooked; if toast or bread crumbs are added to the sauce, put in a little more butter.

EDITORIAL AND SELECTED MISCELLANY.

THE following is a statement of the amount of duties collected at the principal ports for the year ending June 30, 1851:—New-York, \$31,756,199; Boston, \$6,577,540; Philadelphia, \$3,667,838; Baltimore, \$1,047,278; New-Orleans, \$2,296,636; Charleston, \$600,712; Portland, \$209,030; Savannah, \$208,994; St. Louis, \$213,832; Cincinnati, \$105,191; New-Haven, \$102,130; Mobile, \$76,184; Louisville, \$66,572; Oswego, \$91,557; Richmond, \$70,235. . . . The North-western Virginia Railroad Company was organized at Parkersburg on the 2d of August, by the election of James Cook, President; and George Neal, jun., Joseph Spencer, J. M. Bennett, Wm. Logan, and Jefferson Gibbons, Directors. . . . THERE have been for the past few years over 30,000 hogs killed and packed at Alton, and over 100,000 hogs are killed and packed at St. Louis annually. . . . THE city of Alton, Illinois, has voted to subscribe \$100,000 to the capital stock of the Alton and Terre Haute railroad. . . . THE aggregate amount received for tolls on the New-York State Canals, from the commencement of navigation to the 14th of August inclusive, is \$1,702,222 34. . . . THE Sandusky and Cincinnati railroad, the Xenia railroad, the Columbus and Cleveland railroad, and generally the Ohio railroads, have a width of 4 feet 10 inches; Sandusky, Mansfield, and Newark railroad, 5 feet 4 inches; Georgia railroads, 5 feet; South Carolina railroads, 5 feet; New-York and Erie railroad and its branches, 6 feet; and St. Lawrence and Atlantic railroad in Maine and Canada, 5 feet 6 inches. . . . RECENTLY there were shipped, in good order, from the port of Ashtabula, Ohio, twelve boxes of chickens, each holding seventy-five—nine hundred in all—and one box of turkeys, all for New-York city; and the profits will come up to two hundred dollars, to say nothing of the eggs laid by the way. . . . THE potato-rot has made its appearance in the vicinity of St. Johnsbury, Vermont. . . . JOSIAH B. WILLIAMS, of Ithaca, Henry Fitzhugh, of Oswego, and General Adams, of Clyde, have been appointed by the Governor of New-York State to investigate in reference to the practicability of draining the Cayuga marshes. . . . IT is estimated that there are at present one hundred and twenty-five miles of sewers in

New-York city. . . . The following are memoranda of the business of the Baltimore and Ohio railroad for the month of July, 1851 :—

	Passengers.	Freight.
Main stem,.....	\$29,036 10	\$65,912 07
Washington branch,.....	20,737 52	3,377 67
Total,.....	\$49,773 62	\$69,289 74

Making an aggregate of \$94,948 17 on the main stem, and \$24,115 19 on the Washington branch;—the total being \$119,063 36. . . . THE steamer *Baltic*, Capt. Comstock, recently made a trip from Liverpool to New-York in nine days, twenty two and a half hours. . . . MESSRS RODGERS, KETCHUM & GROSVENOR, of Pat-erson, have built a locomotive for the New-York and Erie railroad, calculated to draw forty loaded cars, or a weight equal to 800 tons. . . . THE amount of coinage at the Philadelphia Mint during the month of July was \$3,283,992. The gold bullion deposited for coinage during the same time amounted to \$3,130,000, in addition to \$13,800 in silver. . . . THE cholera has prevailed more extensively in northern Illinois this season than in any other part of the country. . . . THE town of Somerset, Perry county, Ohio, has subscribed \$23,000 to the Cincinnati and Zanesville railroad, and the township in which it is situated voted \$20,000 more. . . . THE orange trees of Florida are recovering from the desolation caused by the *occus* insect. . . . THE city of Middletown, Conn., has subscribed \$200,000 to the Air-line railroad. . . . THE Massachusetts Charitable Mechanic Association will celebrate its Triennial Festival on Monday, the first of October. . . . OUR exchange papers tell us that a "modern young lady," who knew more about French than dairying, one day asked Betty, the milk-maid, which cow gave the butter-milk. . . . THE potato-blight has destroyed many crops in Western New-York. . . . NEITHER rust nor weevil has affected the wheat crop in Vermont this season, which is said to be abundant. . . . EX-GOVERNOR McDOWELL, of Virginia, we regret to learn, died at his residence, near Lexington, on Saturday, the 23d day of August. . . . A RAIN STORM in De Soto and Marshall counties, Mississippi, has damaged the crops severely. . . . THE *Tallahassee Floridian* says, the corn crop is very promising. There will be a better yield than has been before for several years. . . . THE Rochester, New-York, University proposes to take from the public schools in that city three pupils each year, to educate gratuitously. . . . SEVEN slaves, sheltering from the rain under a tree, near Bolivar, Tennessee, were recently killed by lightning, all at one stroke. . . . THE counties of Buchanan and Marion, Missouri, have each subscribed \$100,000 to the Hannibal and St. Joseph's railroad. . . . THE provincial journals of France state that the potato crop, so far as is known, presents no traces of malady. . . . A BLOCK of granite for the Washington monument bears this inscription: "From the home of Stark, by the ladies of Manchester, N. H." . . . THE New-Jersey papers speak of indications of the potato-rot in the western part of the State. . . . RECENT ruins and fine weather have greatly benefited the tobacco crops in Kentucky and Tennessee. It is estimated that Kentucky will produce double the crop of last year. . . . THE committee of the New-Hampshire Agricultural Society, on honey, is composed entirely of editors. "Sweets to the sweet," says a Lowell paper. . . . AT Rondout, New-York, five men were recently suffocated by smoke, while descending into a well which they were blasting. . . . THE distance from the Gulf to the Pacific shore, by the Nicaragua route, is only one hundred and ninety and a half miles, of which twelve and a half are by land, and the rest by steamers on the river San Carlos and the lake Nicaragua. . . . A Sioux chief, at the late conference with Governor Ramsay, expressed an earnest hope that in future the Great Spirit would send the red men more beef and less thunder. . . . THE centennial celebration of the organization of the county of Litchfield, Connecticut, took place last month at the town of Litchfield. . . . THE county of Summit, Ohio, has subscribed \$75,000 towards aiding to complete the Akron branch railroad to Millersburg, and from thence south to inter-

sect the Indiana and Ohio railroad at Coshocton. . . . THE Middlesex, Canada West, *Prototype* says that the potato disease has appeared in different parts of the country. The wheat crop it declares to be the best ever harvested in Canada West. . . . SYLVESTER BECKER, of Stuyvesant, Columbia county, New-York, has raised a fine specimen of flint wheat. The stalks are said to be six feet three inches long, and the head finely filled. . . . THE choice and well-selected library of the late Dr. NEANDER, of Berlin, has been purchased for the use of Lane Seminary, at Cincinnati, for \$3,000. . . . THE Exeter, New Hampshire, *News Letter* says that by the recent tempests, considerable damage was done to corn and fruit-trees in various parts of that State. . . . THERE is to be a centennial celebration of the city of Manchester, New-Hampshire, in autumn. . . . SOME of the Western journals are rejoicing in the prospect of good crops. The potato promise was never finer, although not quite so prolific as in former years. . . . THE New-York *Medical Gazette* says that the operation of amputation of the entire lower jaw was successfully performed for the first time in this country at the Emigrants' Hospital, a few days since; the bone being removed at both articulations. . . . REV. JONATHAN FRENCH, of Northampton, New-Hampshire, who has preached in the same pulpit for fifty years, is about retiring from the ministry. . . . REV DR. OLIN, President of the Wesleyan University at Middletown, Connecticut, died at that place on Saturday, the 16th of August. . . . NEAR Hollidaysburg, Pennsylvania, a man named COPE undertook, for a wager, to cradle two acres of wheat in two hours. He showed himself to be the finest cradler ever seen in that part of the country, but he failed by eight minutes in accomplishing the task. . . . REV. A. BLAND, of the Baltimore Conference, has just been appointed as an additional missionary of that Church to California, and Rev. T. H. PEARNE, of the Oneida Conference, to Oregon. . . . The vineyards, which occupy a large share of the land which slopes southerly in Cincinnati are expected to produce from two thirds to a full average crop, the grapes being generally in good condition.

NEW BOOKS.

THE BOOK OF THE FARM: Detailing the labors of the Farmer, Steward, Ploughman, Hedger, Cattleman, Shepherd, Field-worker and Dairymaid. By HENRY STEPHENS. With four hundred and fifty Illustrations. To which are added Explanatory Notes, Remarks, etc. By JOHN S. SKINNER, Editor of the Farmer's Library. Two vols., or two vols. in one. New-York: C. M. Saxton, Agricultural Book Publisher. 1851. Price \$4.00.

In speaking of this work, we adopt, for obvious reasons, the following critical notice of the *Farmer and Mechanic*:—"Notwithstanding the many excellent agricultural works before the public, and the many valuable instructions which they contain, the author of the above volumes justly remarks: 'A book for the special purpose of instructing young farmers, such as it should be, and such as they are entitled to expect from the hands of experienced agriculturists, is yet a desideratum in the agricultural literature of this country.' To accomplish such a work would require abilities and qualities of the highest order. As a primary qualification, the writer should be an experienced agriculturist; in addition to which he should also be a clear-minded mathematician, fully and adequately to describe in proper language the various implements of husbandry, the best adapted to obtain the desired results. He should also be a man of extensive scientific knowledge, to explain the various phenomena of nature and the rationale of every operation in connection with the process, progress and mysteries of vegetable organic life and structure. These qualifications the author of this valuable work seems to possess, and the agricultural community both in Europe and this country have been fortunate in having the subject brought before them by Mr. Stephens, who has shown himself fully adequate to the task. Having been originally intended more particularly for English husbandry, it became necessary to review it and adapt it to the wants of American farmers, and probably no one could have been selected more capable or better adapted

to the work than Mr. Skinner, the late lamented editor of '*The Plough, the Loom, and the Anvil*.' Himself the pioneer in the great cause of agriculture in America, and the publisher of (we believe) the first Agricultural Journal in the country, the '*American Farmer*,' he possessed qualifications eminently fitting him for the task, which he has so ably performed. As '*The Book of the Farm*,' by Stephens, is considered one of the best publications of the kind in Europe, so '*The Book of the Farm with Explanatory Notes, &c.*,' by Skinner, will be considered among the best published in America, and should be possessed by every farmer in the land."

CATTLE. By W. YOUATT and W. C. L. MARTIN. Being a Treatise on their Breed, Management and Diseases, comprising a full history of the various Races; their Origin, Breeding and Merits; their capacity for Beef and Milk; the nature and treatment of their Diseases; the whole forming a complete Guide for the Farmer, the Amateur and Veterinary Surgeon, with one hundred Illustrations. Edited by A. STEVENS. New-York: C. M. Saxton, Agricultural Book Publisher. 1851. Price \$1.25.

This excellent treatise on cattle should be possessed by every farmer in the country. Besides the very valuable information it affords in regard to the breeding and management of cattle, it is one of the best treatises on their diseases and their treatment that we have seen. Among the most distinguished cattle breeders in England, Youatt is considered, and justly so, the best and most reliable authority on the subject. His is really the work for every cattle owner to possess. Even if an individual have but a single cow, he needs *Youatt* to enable him to look well and successfully to her treatment, management, &c. How many most valuable animals have been lost or become worthless to their owners, that might by the instructions contained in this work have been, by a little attention, saved to them. Let every farmer and agriculturist procure it at once. None should be without it.

THE COTTAGE BEE-KEEPER; or Suggestions for the Practical Management of Amateur, Cottage and Farm Apiaries, on Scientific Principles. With an Appendix of Notes, Chiefly Illustrative. By a COUNTRY CURATE. New-York: C. M. Saxton, Agricultural Book Publisher, 152 Fulton street. 1851. Price 50 cents.

This little volume, the title of which indicates its character, is one that we have no doubt will be very acceptable to the public, notwithstanding several treatises have been published on the subject; still a *cheap* and popular work on the keeping of bees has been for some time needed. This, we think, will supply that need, and more than this, we are pleased to learn from the publisher, that it is intended to form the first volume of a series entitled, "*Saxton's Farm and Cottage Library*," the object of which is to present, in a cheap and popular form, short and concise treatises on the various subjects appertaining to domestic and rural economy. The design is excellent, and we hail this the initial volume with great pleasure.

ELEMENTS OF AGRICULTURE, for the use of Primary and Secondary Schools. By L. BRENTZ, of France, Director of the Normal Primary School of the Meurthe, &c., &c., and A. J. CHRETIEN DE ROVILLE, Professor of Rural Economy in the same School, &c., &c. Translated and adapted to the use of the Rural Primary Schools of the United States of America. By F. G. SKINNER. New-York: C. M. Saxton, Agricultural Book Publisher. 1851. Price 25 cents.

The publisher has issued this work in a neat typography, which renders it admirably adapted to the object for which it is designed. This is expressed in the title already quoted. The very low price at which it is sold places it within the reach of all; and nothing would give us greater pleasure than to see it adopted as a text-book in every school in the Union.

LECTURES ON BOTANY.*

COURSE OF LECTURES ON BOTANY IN REFERENCE TO AGRICULTURE.

By CHARLES JOHNSON, ESQ., *Professor of Botany at Guy's Hospital, &c. &c. At Messrs. Nesbitt's Agricultural and Scientific Training School, Kennington Lane, Lambeth, near London.*

LECTURE IV.

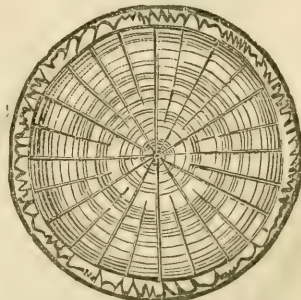
It has been already remarked that the relative distribution of the minute cells and tubes varies greatly in different plants, and occasions organic differences of vast importance to the investigator of their forms and properties. A very large proportion of the Vegetable Kingdom, numerically considered, consists exclusively of the cell, either simple and separating into as many distinct individuals as there are cells produced by the consecutive partition of its original cavity, according to the mode described in the last Lecture, or the plant assumes in its ultimate growth a stem or leaf-like form, in consequence of the new cells remaining attached and forming a more or less compound structure. These plants, collectively called *cellular*, are objects of great interest to the naturalist, and furnish examples of vegetable development that are not without their value in the elucidation of that of the higher orders. In the economy of Nature, too, they are agents ever active and efficient. The sea-weed, the lichen, the moss, and the fungus, constitute no unimportant links of the vast chain of organic existence; but being for the most part beyond the pale of cultivation, any extended notice of their individual structure and characters would be incompatible with our present subject; and I shall therefore now only observe that, with the exception of the last, subsisting chiefly, if not solely, by absorption over their whole surface from the surrounding medium, the vital action is less complicated than in those in which the necessary food imbibed by one set of organs, requires conveyance to others before it can become assimilated or converted into the growing substance of the plant.

The *Lycopodiums*, or club-mosses, the *Equisetums*, or horse-tails, and the ferns, constitute a series occupying a middle station between the cellular and the flowering plants; commencing, like the former, with a development simply cellular, they acquire in their ulterior growth the ducts and woody tissue that characterize the latter, to which the presence of stomates in the leaves of the ferns, as shown in our last Lecture, indicates an approach still nearer; the absence of flowers and of distinct spiral vessels being the principal structural differences.

The influence, direct and indirect, of these flowerless plants upon the nobler tribes of vegetables is at present little appreciated, or at most only by the philosopher in his silent researches into the secrets of Nature: there are still, however, many points in their history intimately connected with the interests of the practical agriculturist, and that may hereafter come under our discussion, although we must leave them for a time, to pursue that of the structure of their more immediately important associates, the flowering plants.

Although composed of elementary organs of the same denomination, and apparently agreeing in the general phenomena of their growth, so far as previously detailed, flowering plants are distinguishable into two groups or classes, differing in various features, but especially in the structure of their stems or trunks; the tissue or organic substance of which is either chiefly disposed in concentric masses, or is more or less mingled throughout, the tubular with the cellular portion; and from the mode in which its increase takes place under these different circumstances, the former are generally said to be exogens or "outward growers," the latter endogens or "inward growers." The exogens form by far the larger, and perhaps the more important of these two classes in regard to human economy in the aggregate; but the endogens are far from being inferior to them in one respect, and that the most valuable of all—the production of food.

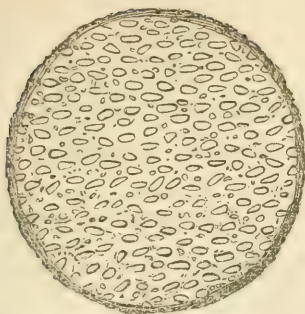
Fig. 1.



SECTION OF EXOGENOUS STEM.

* Continued from page 118.

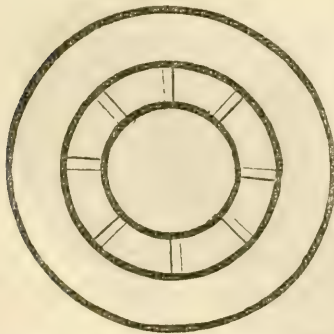
Fig. 2.



SECTION OF ENDOGENOUS STEM.

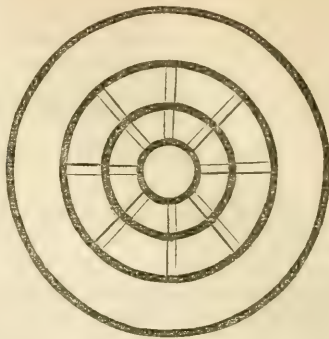
The peculiarity of structure and mode of growth belonging to the exogen will be best observed and understood by examining the development of the trunk and branches of one of our ordinary forest or plantation trees. Commence by dividing, across and longitudinally, a yearling shoot or newly formed branch of either tree or shrub, and you will find its substance disposed in the following manner: The centre is occupied by a column of cellular tissue, the medulla or pith, around this is a cylindric layer of woody matter, technically called the medullary sheath; and the whole is encompassed by a third portion, consisting chiefly of cellular tissue, the bark of the young branch. The stratification of these parts is evident to the naked eye: their ultimate structure is so minute that it can only be traced by the assistance of the microscope. If we pursue our inquiry farther, we shall find that the veins of the leaves are in direct communication with the medullary sheath; in fact, that they are branches or prolongations of the bundles of spiral vessels and woody fibre which compose it, covered with a continuous extension of the cellular tissue of the bark; while the rudimentary buds in the axils or connecting angles of the leaves and stem, are not only organically connected with the sheath, but contain a projecting portion of the medulla likewise.

Fig. 3.



SECTION OF STEM ONE YEAR OLD.

Fig. 4.



SECTION OF STEM TWO YEARS OLD.

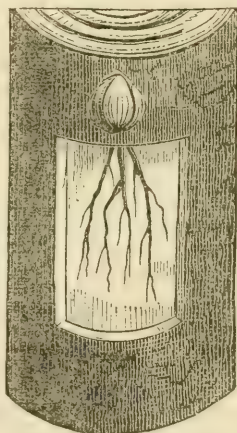
Let us now make similar divisions or sections of the branch from which our yearling shoot proceeds—a similar production to itself, only formed during the preceding summer; yet there is a considerable difference in its structure now: the pith and the medullary sheath remain, but the former has perhaps contracted into half its former compass; its vesicles are no longer turgid, but dry and empty; instead of being regularly formed, they are compressed in various directions; while the latter (the medullary sheath) is scarcely distinguishable from a larger cylinder of woody matter which surrounds and separates it from the bark with which it was previously in contact; the leaves have fallen, and the points of their union with it obliterated, except so far as they are denoted by the development of the buds which they assisted to nourish into branches, the newly formed shoots we have previously examined. The cause of this alteration, and of the greater diameter or thickness of the last year's branch, remains to be explained: before attempting to do so, let us examine a horizontal section of a branch or trunk (for it is immaterial which we take) in a more advanced stage of growth—say of several years, instead of one or two, as exhibited above in fig. 1. Here is the medulla or pith occupying the centre in a still more compressed state, reduced perhaps to a mere point; the sheath is proportionally contracted likewise, owing to the pressure of a great accumulation of later-formed substance around it, viz.: the wood, which, whatever may be its thickness, has been gradually interposed between the medullary sheath and the bark with which it was originally in contact. The wood is seen to consist of many concentric layers or cylinders: each layer consists of a more or less compact mass of woody fibre or sap-vessels, and of ducts, which latter are sometimes distributed throughout the layer, but are more frequently disposed toward the inner face of the woody cylinder to which they appertain. There is another remarkable feature in the wood of all exogenous trees—the presence of what are called medullary rays. In a horizontal sec-

tion they usually present the appearance of so many radii of a circle; they consist of compressed plates of cellular tissue, and extend from the pith in the centre of the trunk or branch quite through the layers of wood to the bark (see fig. 1). Of their office in the economy of the plant we have no positive knowledge, but they probably act as a medium of communication between the outer and inner portions of the trunk, and in the conveyance of those secretions that are eventually deposited in the old or heart-wood of trees. Dr. Lindley very justly observes that these plates or rays "also serve to bind firmly together the whole of the internal and external parts of a stem, and they give the peculiar character by which the wood of neighboring species may be distinguished." "If," he continues, "plants had no medullary rays, their wood would probably be, in nearly allied species, undistinguishable, for we are scarcely aware of any appreciable difference in the appearance of woody or vascular tissue; but the medullary rays (the *silver grain* of the carpenters) differing in abundance, in size, and in other respects, impress characters upon the wood which are extremely well marked. Thus, in the cultivated cherry, the plates of the medullary rays are thin, the adhesions of them to the bark are slight, and hence a section of the wood of that plant has a pale, smooth, homogeneous appearance; but in the wild cherry the medullary plates are much thicker, they adhere to the bark by deep broad spaces, and are arranged with great irregularity, so that a section of the wood of that variety has a deeper color, and a twisted, knotted, very uneven appearance. In *Quercus sessiliflora* (the sessile-fruited oak) the medullary rays are thin, and so distant from each other that the plates of wood between them do not readily break laterally into each other, if a wedge is driven into the end of the trunk in the direction of its cleavage: on the contrary, the medullary rays of *Quercus pedunculatus* (the oak with long-stalked acorns) are hard, and so close together that the wood may be rent longitudinally without difficulty; hence the wood of the latter is the only kind that is fit for application to park paling."

Observation has proved that each concentric layer of which the wood is composed is the produce of a year's growth, insinuated between the next interior layer and the bark. It has likewise enabled us to ascertain the mode in which these successive layers are formed. In the first place, it is proved positively that they are extended in a downward direction: for example, if during the winter we cut away a portion of the bark of a tree or of a branch, so as to form a continuous wound completely surrounding it—a process sometimes performed in gardening, and called *ringing* or *girdling*, from the figure of the wound—in the succeeding spring, soon after vegetation commences, the upper lip of the cut becomes rounded, in consequence of the formation of woody matter above it, while

the lower one remains in the same state in which the knife left it; the part likewise above the incision increases sensibly in diameter, the part below does not. The same difference occurs if a wire or ligature be tightly bound round the trunk or branch: the matter therefore which causes its increase descends. Again, if a growing branch be cut through immediately below a leaf or bud, that branch never increased in diameter between the section and the next bud below it; so far, indeed, from doing so, it becomes dead matter. We know also that the greater the number of leaves or leaf-buds developed on any tree during a season, the more does the diameter of its trunk become enlarged. These are circumstances all well known, facts thoroughly ascertained; and from them we are justified in concluding that the successive annual deposits of wood are produced by the growth of the buds; and when to them is added the equally substantiated fact, that in the early spring the incipient or newly forming wood may be traced in the form of roots descending from the bases of the already enlarging buds, the phenomenon of the growth or increase in the wood of exogenous trees is explained as satisfactorily as the present state of human Science admits.

Fig. 5.



WOODY FIBRE DESCENDING FROM BASE OF GROWING BUD.

The variegated lines and spots, which constitute the chief beauty of wood when manufactured, are chiefly due to the successive curvatures which these descending root-fibres of the buds make in avoiding the previously developed twigs and branches, and to the included basements of those branches, which are thus gradually inclosed or surrounded by the fibres of the new wood, forming what are vulgarly called *knots*. Hence those trees called *dwarfs* or *pollards*, which develop the greatest number of small branches immediately from the trunk, though often less valuable as timber than those which have an erect

and well proportioned stem, are far more prized for cutting into veneers for ornamental works, on account that the more the bases of the branches are confounded, the more abundant will be the curvatures formed by the descending fibres of the buds, and consequently the more beautiful the wood. The celebrated oak of Fairlop, in Hainault forest, Essex, was a pollard of this description; and a very beautiful specimen of its wood may be seen in the reading-desk and pulpit of St. Pancras church in the New Road, north of London.

To protect the newly forming wood from injury, and prevent the premature contraction of the absorbent vessels of the growing buds (which are precisely analogous to the root-fibres of herbaceous plants,) during their progress downward, this process is carried on beneath the bark. In the spring, about the time when the buds of the trees begin to enlarge, the bark readily separates from the last year's wood; and a viscid secretion, called the *cambium*, which takes place between the two at that period, is probably the cause of this. It is conjectured that the descending fibres of the buds are nourished by this secretion; and we may even conceive that the ascent of the sap through the woody tubes—the first movement of it, at least, after the torpor of winter has subsided—is occasioned by the stimulus communicated to the vessels in the vicinity of the growing buds, to maintain the flow and supply the continued consumption of the cambium. The bark, which in speaking of the first year's shoot was regarded as a single integument, is in the trunk or older branches a compound of many, according to the age of the part it covers: a new layer is, indeed, formed annually, coeval with the formation of the new layer of wood; but the direction of its increase is the reverse of that of the wood, the new matter being internal or immediately surrounding the new layer of wood. The annual addition to the two, viz.: to the bark and wood—occasions the exterior layers of the former to separate on the trunks of old trees, and either peel off in strips, as in the common birch tree, whose stem looks at a distance as though striped with silver, in consequence of the newer bark appearing in the interstices left by the gradually deciduous old one; split into large brittle flakes, as in the plane, leaving the trunk curiously mottled with golden yellow; or, if it still remains attached, it assumes the cracked and ragged appearance characteristic of that of the elm. Each layer of the bark consists, like the first described as enveloping the newly developed shoot, of cellular tissue, the interior portion of which is intermingled with woody or tubular tissue; but as the bark increases in thickness, the outer coats gradually lose this regularly organized appearance, and become dead matter; hence the earlier botanists distinguished two separate barks, and considered that each of them was increased by a new annual layer. The outer, really disorganized portion, was denominated the *cortex*; the inner, more recently formed, was

named the *liber*, the different coats or successive layers of which, being readily separable in some trees, formed among European nations one of the earliest materials used for writing upon, whence the indiscriminate use of the Latin word *liber* to express a book and the inner bark of a tree, the English words *bark* and *book* being likewise both derivable from the Saxon *boc*.

Experiment, which can scarcely be controverted, proves that the living portion of the trunk of an exogenous tree consists only of the outer layer of the wood and the inner one of the bark, or at least that the preservation of these only is sufficient to maintain the vegetation of the tree where they are of sufficient strength to stand alone: the bark, with the exception of the innermost layer, may be wholly removed without checking the vigor of its growth; the wood, as may be often seen, may be wholly decayed, with the exception of the outer coats, leaving the trunk a mere shell, which nevertheless puts forth fresh shoots every year, and covers itself with verdure. This is indeed the case, and has been perhaps for many centuries, with trees now standing, of enormous bulk, especially oaks, and among others that of Salcey in Northamptonshire, which some have computed to be more than 1500 years old. But if an incision be made, of sufficient width to prevent its healing rapidly, round the trunk of a growing tree, so as to penetrate both the bark and the outer circle of the wood, and remove a ring of the latter, its importance is readily demonstrated: if the experiment be made in the early part of the spring, previous to the flow of the sap, the death of the tree or branch inevitably follows. The operation is frequently performed in the back settlements of North America, preparatory to that of felling and removing the timber from the land, as the first step toward cultivation; it is there called *girdling*, and is done by cutting a complete circle with an ax round the trunk of the tree, so as to cut off all communication of the living wood with the root. Trees thus treated rarely survive beyond the season in which the operation is performed; but, it is said, there are exceptions, though these may probably be occasioned by unequal or imperfect removal of the woody circle in question. In experiments made in this country upon various trees, I have invariably met with the result above stated: the buds upon the isolated branch have been sometimes developed, or partially so; but, if the wound were sufficiently deep and uniform, so as to take away a portion all round of the last year's wood, no after-generation of buds took place, although all of the interior layers remain perfect—proving that the solid timber of a tree has nothing to do with the after-growth of it.

Taking into consideration the mode in which the diametrical increase of the trunks of exogenous trees take place, viz., the annual addition of a layer of wood and of bark between those previously formed, while the

older layers of the latter split or exfoliate when their tissue is no longer capable of distending, it would appear that there are no assignable limits to their growth; that there is no inherent cause, except the decay of vigor to which all organized bodies are subject after the lapse of a certain period, why their trunks, though originally a mile asunder, should not increase in bulk until they met, and thus, as a fanciful though ingenious philosopher once expressed his idea upon this subject, cover the whole earth with "ligneous mountains." However specious in theory, we have no facts in favor of the probability of such a result; and yet, to judge from their bulk, some trees still existing in a healthy state must have attained an enormous age; and, as when a tree is cut down the number of its years may be frequently ascertained with a tolerable degree of certainty, others have been actually examined, which had lived from 1,200 to 1,600 years. An attention to the age of trees, thus estimated, might occasionally assist an antiquarian in his researches, particularly, too, where the object of his curiosity had outlived the history of its date, or even passed the more extended notice of tradition; it has even been so employed. Of the above description of objects are those extensive embankments in the neighborhood of the Great Lakes of North America, supposed to be the ruins of ancient fortifications; they are evidently the work of a race different from that of the present Indian tribes of those parts, who possess no tradition of their origin, and seem to entertain no opinion at all respecting their use; they are regularly formed, and generally built where a ravine or natural high bank strengthens the one side; the walls are of earth, and at present about five or six feet in height; at some past period they may have been considerably higher, as when first discovered trees of very large size were growing upon the mounds, indicating the lapse of a considerable space of time since their erection. A continued barrier of these works is said to extend from the northern side of Lake Ontario toward the river district, and thence across to the vast plains that reach the Mississippi. Now fortifications, however rude, upon the extensive scale on which these are described by travelers, must be connected with some very important feature in the history of the country they traverse, and have given rise to various speculations concerning their origin; however, by counting the number of woody circles in some of the trees just mentioned, it has been ascertained that upward of 450 years must have elapsed since the works were abandoned, or rather since Nature began to reassert her dominion over the usurping power of Man, at which period it is but reasonable to suppose the trees in question first rose from seed upon the spot where they had so long flourished. This calculation brings the possible date of their origin nigh to an epoch which renders it far

from improbable that they were the work of the ancient Mexicans, previous to the migration of that people southward, of which circumstance, it is well known, their tradition at the time of the Spanish Conquest had preserved the memory.

The age of a growing tree cannot be estimated by any known characters; and on this account, and perhaps in some measure owing to mankind being naturally fond of the marvelous, some remarkable trees still standing have had a most extraordinary age assigned to them. It is true that various rules for ascertaining it, founded upon careful observation, have been laid down by certain naturalists; but they are too arbitrary to satisfy a rigid inquirer. Bosc and others have allowed a foot in diameter for the growth of a hundred years in the oak. Now there are oaks growing in this country at the present day, which, according to their calculation, must be from 1,000 to 1,500 years old, their trunks being from 10 to 15 feet in diameter at the surface of the ground. It is not intended to deny the possibility of a tree attaining this or even a much greater age, but merely to show the fallacy of the grounds upon which calculations are made. So long as a tree continues to live, there must be an annual development of buds, and, however thin it may sometimes be, an annual formation of wood. So long, therefore, as a tree exists, a diametrical increase of the trunk must take place in one direction or another, if not generally; and that increase will be proportionate to the number of buds unfolded—in other words, to the quantity of foliage, to the luxuriance of the tree; consequently, when a tree has been flourishing in a perfect state for some centuries, its diameter will be proportionally greater than that of another, which has had its branches broken by storms or scathed by lightning, and its number of buds thus diminished. I will adduce one example of the fallacy of calculations made upon the diametrical increase of the trunk of a tree indicating its age. The Golenos oak, a very remarkable one of its kind, which grew about four miles from Newport in Monmouthshire, was felled for the use of the Navy in the year 1810; the diameter of the trunk of this tree, which was perfectly sound in every part, and at the time of its being felled was in full luxuriance of growth, was nine feet and a half. Now, according to the above mode of calculation, (a foot in a century,) this tree would have been estimated, while standing, to be 950 years old. I am not acquainted with the precise number of its woody layers, but they were considerably under 450—to the best of my recollection, 436 or 437. Here, then, had been a diametrical increase of more than double the standard allowed by Bosc, which sufficiently shows the little dependence that ought to be placed upon computations of the kind. Speaking of this particular tree, we ought not to omit remarking upon a curious, though not a sin-

gular circumstance that was brought to light during the process of converting, that is, of reducing it to the form required for the purpose to which it was destined to be applied. When the main trunk was sawn through, a stone of six inches in diameter was found inclosed in its substance, three feet deep in the body of the tree, and about six feet from the ground when it was standing. Such or similar phenomena are not of unfrequent occurrence: we have often heard, not only of stones and other inorganic bodies, but of toads and serpents thus enveloped in logs or masses of wood; and although the alleged vitality of the latter on exposure to the light and air may be reasonably questioned, their lodgment is far from being miraculous. There are perhaps few growing trees that have not suffered dismemberment of a branch, or by some other accident had a temporary hollow or wound inflicted on their trunk, in which a stone might be lodged by some dexterous youth, or a reptile might hide itself to doze out the approaching winter. The growth of the wood of a luxuriant tree in the spring is much more rapid than might generally be imagined—indeed, I may state from my own observation, in some species almost astonishing; and the wound would be more quickly healed or closed in when thus partially filled by an extraneous body, and the stone imbedded, or the waking reptile prevented from escaping by the contraction of the aperture, and, after a lapse of many years, be found occupying a place in the solid timber of the tree, without any visible trace of the passage by which it had entered or been introduced, because the succeeding layers of wood, meeting with no interruption in their descent, would be entire.

There is another circumstance here worthy of notice respecting the production of the wood; it is the difference observable in the thickness of the layers proportionally with each other, and likewise of the same layer in different parts of its circumference; the former difference depends upon the nature of the season in which each individual layer is formed, the latter upon the situation of the tree. You can scarcely examine a horizontal or cross section of the trunk of a tree, in which there is not a very manifest inequality in the diameter of the different annual deposits of its wood. Now, as I have shown you that the wood is formed by the descending fibres or roots of the buds, the quantity produced during each season of growth must depend upon the number of buds developed, and the vigor with which they are extended into branches; each leaf contributing, as it unfolds, its quota of woody substance to the general mass. Both of these will vary from a variety of circumstances, more especially from the temperature and vicissitudes of the season that brings them forth. When the spring is cold, and sharper winds prevail than ordinary; when severe frosty nights or mornings succeed hot days;

or when a few weeks of sultry weather are succeeded by a dull, ungenial atmosphere and chilling rains, many of the buds, awakened into action by the warmth of the sun, are cut off by the frost and other changes of the weather, and, of necessity, a less luxuriant vegetation is the consequence; the layer of wood formed during that summer will be thinner than that produced under circumstances more congenial. In an oak-tree that Linnæus examined in the island of Eland, in the Baltic Sea, he discovered, and has recorded a very remarkable proof of this fact, in the comparative thinness of the woody layers, which from their situation, counting inward or from the circumference to the center, he ascertained to have been produced during the years 1709, 1687 and 1578, these three years being memorable in the North of Europe for the shortness and low temperature of their summers and the severity of their winters.

In regard to the difference resulting occasionally between opposite parts of the same layer, it arises from similar ultimate causes; but these depend upon the situation of the tree. You will perhaps rarely meet with a section of a trunk in which the pith, or rather the place it originally occupied, which is the center around which the various layers are deposited, is in the exact center of the mass, and frequently it is widely apart from that point. When a tree grows in the heart of a forest, or of a plantation, or in any equally sheltered spot, the disposition of the layers will be most regular; but when it stands in an open situation, the layers of wood are uniformly found to be thicker upon the south than on the north side of the trunk; a difference probably occasioned by the sap flowing with greater celerity, and the secretions being more abundant, on the side most exposed to the influence of the sun's rays, that, while they contribute to the relaxation of the vessels, and render by their warmth the sap more fluid, probably favor a more copious precipitation of the carbon and other principles that enter into the formation of the woody fibre. Added to this, there is generally a more exuberant growth, or rather development of buds upon the south side of a tree that grows equally exposed; and though their fibres may not always descend perpendicularly, it may readily be conceived that they would tend toward that side of the trunk where the tissue was the most yielding and the secretion of the cambium most abundant.

The mode of growth we have here detailed as that characterizing an exogenous or outward growing plant can only be understood by constant reference to the compound nature of those bodies which in common estimation we regard as possessing an individual existence. Every plant, after its first development from seed, becomes really an increasing combination of many; every leaf is an individual, every bud multiplies and becomes a family; and these families are successively

produced in the exogen upon the dying bodies of their predecessors, sending down from year to year their roots over their roots, and thus producing an accumulation of woody matter, in as it were a succession of hollow cones, cone over cone. This conical form of the trunk, as it is called, is a constant character of all the trees of this vast class of vegetation; the base of it is always larger than the parts above, and they taper to their extremities, as is seen in the trunks and branches of all our English trees and shrubs. The tendency to this form is shown even in the annual stems of herbaceous plants, the base of which is larger than the upper end in consequence of its containing the woody tubes descending from a greater number of leaves and developing buds. The characters resulting from exogenous increase can scarcely be traced in a perennial herb, and in those of an-

nual duration are altogether wanting; but the stratification of the tissue is the same as in the young shoot or incipient branch of a tree: the external bark, the woody sheath, the central column of pith, even the medullary rays, the connecting medium between the pith and the bark, are present. The production of these latter and other circumstances connected with the differential characters of exogens and endogens, in their earlier stages of growth, will be illustrated when we come to discuss the phenomena of the germination of the seed; at present we will content ourselves with a comparatively superficial glance at the several structures, leaving their ultimate origin for after consideration, when we have become a little more familiar with the more obvious facts and the general opinions deducible from them

TABLE,

Showing the Value of Foreign Coins, Weights and Measures.

RATES AT WHICH FOREIGN MONEY OR CURRENCY ARE FIXED BY LAW.

Franc, of France or Belgium.....	\$0 18	6-10
Florin, of Netherlands.....	40	
Florin, of Southern States of Germany.....	40	
Guilder, of Netherlands.....	40	
Livre (Tournois) of France.....	18	1-2
Lira, of the Lombardo-Venetian Kingdom.....	16	
Lira, of Tuscany.....	16	
Lira, of Sardinia.....	18	6-10
Milrea, of Portugal.....	1	12
Milrea, of Azores.....	83	1-8
Marc Banco, of Hamburg.....	35	
Pound sterling, of Great Britain.....	4	84
Pound, of British Provinces of Nova Scotia, New Brunswick, Newfoundland and Canada.....	4	00
Pagoda of India.....	1	84
Real Vellon, of Spain.....	05	
Real Plate, of Spain.....	10	
Rupce Company.....	44	1-2
Rupce, of British India.....	44	1-2
Specie Dollar, of Denmark.....	1	05
Rix Dollar, or Thaler, of Prussia and the Northern States of Germany.....	60	
Rix Dollar, of Bremen.....	78	3-4
Ruble, Silver, of Russia.....	75	
Specie Dollar, of Sweden and Norway.....	1	06
Florin, of Austria.....	48	1-2
Ducat, of Naples.....	80	
Ounce, of Sicily.....	2	40
Tale of China.....	1	48
Leghorn Livre.....	16	

TABLE OF FOREIGN WEIGHTS AND MEASURES, REDUCED TO THE STANDARD OF THE U. STATES:

<i>Amsterdam.</i>	
100 lbs., 1 centner.....	pounds 108-93
Last of grain.....	bushels 85-25
Ahm of wine.....	gallons 41-00
Amsterdam foot.....	foot 0-93
Antwerp foot.....	foot 0-94
Rhineland foot.....	feet 1-03
Amsterdam ell.....	feet 2-26
Ell of the Hague.....	feet 2-24
Ell of the Brabant.....	feet 2-30
<i>China.</i>	
Tael.....	ounce 1 1-2
16 taels 1 catty.....	pounds 1 1-2

100 catties 1 picul.....pounds 133 1-4

England.

Old ale gallon.....	gallon 1-23
Imperial gallon.....	gallon 1-20
Old wine gallon.....	gallon 1-00
Quarter of grain, or 8 imperial bush.....	bush. 8-25
Imperial corn bushel, or 8 imp l gall.....	bush. 1-03
Old Winchester bushel.....	bush. 1-00
Imperial yard.....	inches 36-00
Troy pound.....	pounds avoirdupois 144-175

France.

Metre.....	feet 3-28
Decimetre (1-10th metre).....	inches 3-94
Velt.....	gallons 2-00
Hectolitre.....	gallons 26-42
Decalitre.....	gallons 2-64
Litre.....	pints 2-11
Kilolitre.....	feet 35-32
Hectolitre.....	bushels 2-84
Decalitre.....	quarts 9-08
Millier.....	pounds 23-05
Quintal.....	pounds 220-54
Kilogramme.....	pounds 2-24

Portugal.

100 pounds.....	pounds 101-19
22 pounds (1 arroba).....	pounds 22-26
4 arrobes, of 22 pounds, (1 quintal).....	pounds 89-05
Alquiere.....	bushels 4-75
Majo, of grain.....	bushels 23-03
Last, of salt.....	bushels 70-00
Almude, of wine.....	gallons 4-37

Russia.

100 pounds, of 32 laths each.....	pounds 90-26
Chertwert, of grain.....	bushels 5-95
Vedro, of wine.....	gallon- 2-25
Petersburg foot.....	gallons 1-18
Moscow foot.....	gallons 1-10
Food.....	pounds 1-36

Sweden.

100 pounds, or 5 lispunds.....	pounds 73-76
Can, of can.....	bushels 7-42
Last.....	bushels 75-00
Cann, of wine.....	gallons 69-09
Ell, of cloth.....	feet 1-95

Smyrna.

100 pounds, (1 quintal).....	pounds 129-48
Oke.....	pounds 2-83
Quital, of grain.....	bushels 1-46
Quital, of wine.....	gallons 13-50

CULTIVATION OF THE VINE.

MANAGEMENT DURING THE SECOND YEAR.

—March 1.—Remove the covering, and fork up the surface of the ground, to the depth of two or three inches, that the sun and air may freely penetrate it. April 1.—Keep the soil round the roots free from weeds, and the surface of it loose, either by raking or forking it up as often as necessary. May 1.—Now remember that only a single shoot is permanently to be trained throughout the summer; the object of leaving two buds the previous autumn being to provide against the loss of a shoot in case of any accident. As soon, therefore, as the strongest has grown sufficiently to be out of danger of being accidentally rubbed off, the other is to be cut out, as hereafter directed. If any other shoots have pushed besides the two principal ones, rub them all off. As soon as the shoots have grown about a foot in length, nail them to the wall or fence, as the case may be. Do this very carefully, for they are as yet extremely tender. When they have grown about six inches from the last nailing, they must again be nailed, and continually kept so, never suffering the tops of the shoots to be blown about by the wind. As the tendrils and lateral shoots successively appear throughout the summer, pinch off the former when they have grown about three inches in length, and the latter to an inch beyond the first eye. June 1.—Throughout this month, and the two following ones, whenever the ground appears parched through by the heat of the weather, give the roots, once a day, about half a gallon of soap-suds, or dung-water. Keep the ground free from weeds, and the surface loose and open, by raking or forking it up once a week throughout the summer. July 1.—The young shoots being firmly united to the preceding year's wood, and therefore past all danger of being broken off by any accident, unnailed the weakest shoot of the two and cut it out close to the stem, making the surface of the wound quite smooth and even. The remaining shoot must be kept nailed to the wall as before directed. November 1.—Cut the vine to the two lowermost buds, and in the winter, if the weather be frosty, cover the ground over in the same manner as in the preceding winter.

THIRD YEAR.—March 1.—The winter covering may now be removed. (provided there should be no hard frost,) and the surface of the ground must be made quite mellow by using lightly a garden fork or trowel, observing great care to avoid disturbing the roots, as they will now be found very near the surface. Let the subsequent treatment through-

out the season be precisely the same as in the preceding summer. If any fruit be shown, pinch it off as soon as it appears. November 1.—It is presumed the stem of the vine will now be more than two inches in girth, and therefore two leading shoots are to be permanently retained the next year. For this purpose, cut the vine down to the three lowermost buds, thus reserving one to spare, in case of accident. The vine will then resemble the adjoining figure. The roots being now sufficiently strong to withstand the severity of the weather, will not in future require covering.

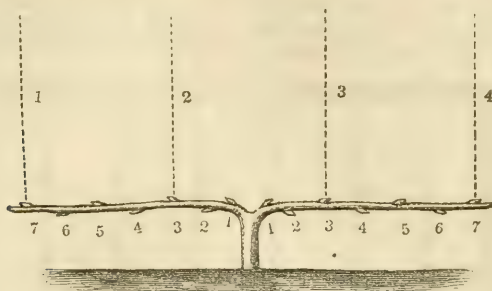


FOURTH YEAR.—March 1.—Clean the surface of the ground, and fork it up lightly, and let the subsequent management throughout the season be the same as before. May 1.—As soon as the shoots have grown a sufficient length, nail or tie them carefully to the wall or trellis, and rub off all the others, if any should have pushed. If fruit be shown, pinch it off as in the preceding year. July 1.—Unnailed and cut out the weakest of the three shoots, and train the two remaining ones carefully during the remainder of the season. Sept. 1.—Pinch off the tops of the shoots. November 1.—As the girth of the stem will not be less now than three inches, the vine may be permitted to mature fruit the next year, not exceeding five pounds weight; for this purpose, cut down the two shoots to the seven lowermost buds each. Prune away the remaining portion of the tendrils and dead wood close to the shoots; and cut out carefully all the lateral shoots close to the base of the buds, whence they have sprung. If the outer bark of the stem be decayed, rub it off clean; and then nail or tie the shoots to the wall or trellis in a temporary manner.

FIFTH YEAR.—February 1.—As soon after this time as the weather is open, cut out of each shoot the first, second, fourth, fifth, and sixth buds; then bend the two shoots carefully down, and secure them in a horizontal position, similar to that represented by the shoots in the adjoining figure. March 1.—Clean the surface of the ground, and fork it up as in the preceding year. May 1.—Train the shoots that push from the buds 3 and 7, in the manner represented by the dotted lines 1, 2, 3, 4, and if more fruit shows than is equivalent to the weight before mentioned, the excess must be cut off when the berries are set. July 15.—Continue the same course of management as in the preceding year, and

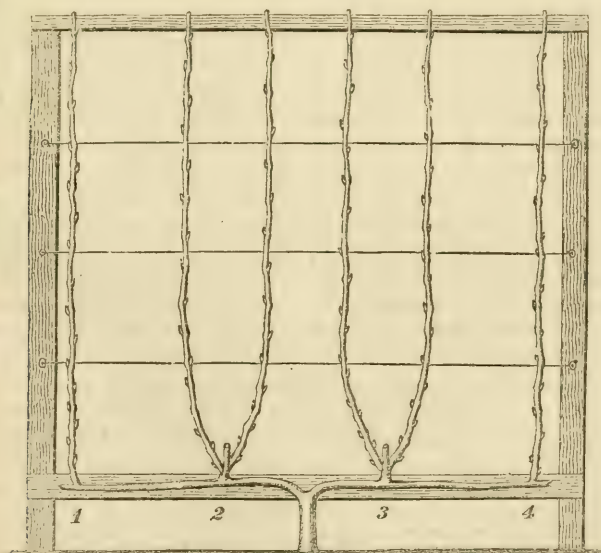
when the roots require watering, they are now sufficiently strong to have applied to them for that purpose any description of

liquid manure that can be most conveniently obtained. September 1.—Pinch off the tops of the shoots, and the sap will then accumu



late in the buds. Here we will leave our author, and pursue a somewhat different treatment. Early in October, or soon after the fruit is gathered, let the shoots numbered 1 and 4 be cut back to as many buds as may be deemed necessary to produce the quantity of fruit which the vine can mature the next year, and let those marked 2 and 3 be cut back to the three lowermost buds. The lateral shoots, as also the stumps of the tendrils, should be cut out as directed in the preceding year. Let the loose and decayed bark be rubbed or scraped off, and the shoots fastened to the wall or trellis, to protect them during the winter.

SIXTH YEAR.—Commence early in March, and treat the ground in every respect, during the season, as in the preceding year, taking care to incorporate all the leaves or clippings of the vines with the earth about the roots. Early in May, or as soon as the shoots numbered 2 and 3 have grown a sufficient length, fasten them carefully to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (as indicated in the adjoining figure) precisely as those numbered 1 and 4 were the year preceding, due care being observed to deprive all the shoots of any superfluous fruit or leaves



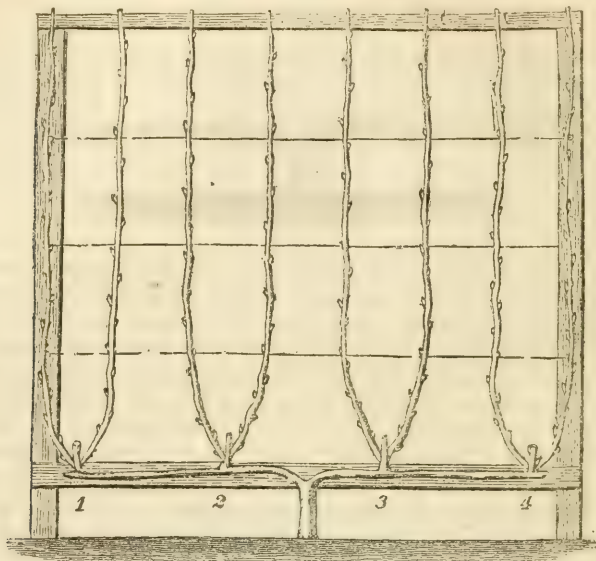
which may put forth. In October, soon after the fruit is gathered from the shoots numbered 1 and 4, cut them down to the three

lowermost buds, thus reserving one to spare in case of accident, in order to produce double shoots the following year. No farther

treatment will be required than rubbing or scraping off all loose and decayed bark from the vines, until the next spring.

SEVENTH YEAR AND SUBSEQUENT TREATMENT.—Commence early in the month of March, and treat the ground throughout the season as directed for the preceding year.

Early in May, or as soon as the shoots numbered 1 and 4 have attained a sufficient length, carefully fasten them to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (indicated by 1 and 4 in the annexed figure) in



every respect as those numbered 2 and 3 were the year before. By the end of the 7th year, if the plant belongs to a vineyard, in which the vines are grown at the distance of six feet apart, it will have acquired a sufficient number of leading shoots to bear fruit in abundance. But if it be an isolated vine, the horizontal branches may be allowed to extend themselves, and a pair of new shoots added each year, as long as the fertility of the soil and the nature of the situation may require it. During every subsequent year, the treatment of the ground during spring and summer should be the same as in the two seasons preceding. Early in September, the tops of the young shoots should be pinched off, in order that the sap may be assimilated into buds; and in October, or soon after harvesting the grapes, cut back the shoots of the same year and leave but four eyes to each; as, by leaving too many, the vine becomes exhausted and yields but little fruit, and is soon destroyed by premature decay. The shoots should be cut off in an oblique direction, opposite to, and about an inch and a half above, the fourth eye from the old wood, in such a manner as will shed the rain and allow the buds to suffer no injury from the wet. In the course of the month of May, the vines should be examined and all the shoots from the old wood rubbed off; and if an eye of the last year's growth should be found to pro-

duce twin shoots, the weakest of the two must be removed, in order that the remaining one may the better thrive. In the course of the season, the superfluous leaves and twigs must often be thinned out; and about the first of September, as in the preceding years pinch off the tops of the shoots, in order that the sap may assimilate in the buds that are to be reserved for the next year. If the vines appear to be too exuberant, they may be pruned at the roots, without injury, at any season of the year. The most convenient period, however, for performing this operation, where the climate is mild, is in November, when the roots should be exposed to the light and air, by drawing away the earth, and letting them remain till spring; but where the winters are severe, and subject to continued ice and frost, early in December they should be re-covered with earth, mixed with well-rotted manure, leaf-mould, husks and seeds of grapes, or the clippings and leaves of vines. If they remain exposed during winter, early in March the earth should be restored, and mixed with the manure or other substances, as named above. This mode was called "ablagueatio" by the Romans, and is still practiced with advantage in some parts of Italy and Spain.

Although spring and summer pruning of the vine may advantageously be adopted in all countries of the globe, yet in places ex-

posed to the sun, with mild winters, pruning in autumn is thought to be the best, the most natural, at which time trees and shrubs, by a divine and eternal law, drop both their fruit and leaves. "Snag pruning" is thought to be preferable by some, because, in "close pruning" the wounds spread, and prevent the protrusion of buds near the affected parts; but if these parts be covered at the time of pruning with a preparation of fine earth or white-lead, mixed with linseed oil, they will immediately heal.

Mr. Loudon, in treating of the vine, mentions three modes of pruning it in hot-houses, viz: the fruit-tree method, in which the plant is spread out in the manner of a fan, and trained like a common fruit tree; the long or young-wood method, in which all the wood above a year old is cut out down to the stool or stock; and the spurring-in method, in which the fruit is produced from young wood grown annually from the seeds of the main

shoot, or shoots of old wood. The last two methods he regards as the best.

It is customary with many to cultivate flowers, or vegetables of various kinds, between or near their vines, without reflecting that they are doing them great injury by abstracting their proper nourishment from the soil; a practice not only strictly guarded against by the most intelligent vine-dressers of the present day, but condemned by all ancient writers on the subject; and Moses, in exhorting the people of Israel, very forcibly elucidated his discourse by commanding them not to defile their vineyards with the fruit of divers seeds:

"Thou shalt not sow thy vineyard with divers seeds; lest the fruit of thy seed which thou hast sown, and the fruit of thy vineyard, be defiled."
DEUTERONOMY, xxii. 9.

Thus plainly showing that the wisdom and prudence of this important law was well understood even at that early day.

THE SHEPHERD'S DOG.

WITH SKETCHES AND ANECDOTES.

Extract of a letter from G. W. LAFAYETTE—Chavaniac,* Nov. 5, 1845—to the late John S. Skinner.

"I am here in a place very dear to me—the house in which my father was born. I will remain until December, the time at which I will have to attend the Chamber of Deputies in Paris.

"You must not think I have forgotten the Dogs. To send useful animals so far, it is necessary to choose them with discernment. I hope to be able to send you two dogs from Brie, well broken; the one to remain near the shepherd, the other on the outside of the flock. I will send you, also, two dogs from Auvergne, equal to those of the Alps or Pyrenees. You will receive, at the same time, instructions as to the employment of each."

* CHAVANIAC—the birth-place of General LAFAYETTE, inherited by GEORGE W. LAFAYETTE from his Aunt, MADAME DE LUSIGNAC. The Shepherd's Dog of Brie is about as large as a medium-sized Setter—with long, rough, wiry hair, generally, though not always, black; bright, intelligent, but rather wild-looking eyes; in form loose and gangling, for action and endurance incomparable. With different and suitable training, he is also of great use to the *drover*.

In the mountainous parts of France, the *wolves* are frequently forced by the snows into the valleys and plains, where from their size and voracity, they become exceedingly dangerous to both man and beast—not unfrequently destroying both, in the very midst of the villages. In these regions, the flocks are protected by large mastiffs—dogs of the largest size, of great intelligence, and of magnificent appearance—two of which are considered more than a match for any wolf. The breed exists in its greatest purity in the Pyrenees.

The disposition which exists to establish large sheep farms in the mountainous and other portions of the Southern States, so far south as not to require cultivated food in winter, can never be carried out successfully until some legislative provision is made against sheep-killing dogs, and until there shall exist a more general conviction of the indispensable services of Shepherd's Dogs, and provision be made for a more general supply of them, with the knowledge of the manner of raising and using them. It is with a view to all these objects that we wrote a friend on whom has descended, in all its force, his father's love of America, and it is with the same views that we shall endeavor to familiarize our readers with all the bearings of the subject. For shepherds, we are inclined to believe that, where they can be had, the Indians and Mexicans will make the best. There is in their nature and habits something pastoral, quiet and solitary, that serves to adapt them to the care of flocks. If the Alpaca is ever to be acclimated in this country, it must be in high, dry and warm regions, wherever they are to be found. We may be mistaken, but—we shall see.

The danger is, on the first introduction of Shepherd's Dogs, that their use may be abandoned in disappointment and disgust, from want of reflection on the part of the sheep-owner that the *sheep*, as well as the dog, will require to be *trained*. In our country no sight is more terrible to sheep than that of a dog. All their asso-

ciations with him warn them of danger and destruction. It is related of Mr. *Jefferson*, to whom a well-broken Shepherd's Dog had been sent from abroad, that after explaining to his visitors the sagacity and usefulness of the Shepherd's Dog, he led them to the fields, taking along the dog, to give them an exhibition of his fine qualities. On the first indication of what he was to do, the dog made for the sheep, and they scattered in all directions, terrified to death, and the dog not much less confounded at their strange behavior. Some of them threw themselves over precipices, and the dog was never recovered.

Sheep must be brought up in familiar intercourse with the dog, that he may mind and manage them. The fear of dogs, with our sheep, is doubtless hereditary, as are other qualities of animals, of which many and curious instances might be given. In a communication to the Royal Society in 1807, Mr. Knight cited several instances of domesticated animals inheriting the *acquired* habits of their parents. In all animals, he says, this is observable; but in the dog, he says, it exists to a wonderful extent, and the offspring appears to inherit not only the passions and propensities, but even the resentments of the family from which he springs.—“I ascertained that a terrier, whose parents had been in the habit of fighting with polecats, will instantly show every mark of anger when he first perceives the scent of that animal, though the animal itself be wholly concealed from his sight.”

In MARTIN'S HISTORY OF THE DOG, he says: “The Shepherd's Dog is of middle stature, or rather low in proportion to its length, slightly but vigorously formed, and quick and active in its movements. Though not quarrelsome, it is very courageous, and will resolutely encounter the fox in defence of the sheep; and though, unlike the spaniel, it is indifferent to caresses, and distant toward strangers, yet to its master it is most devotedly attached. When the labor of the day is over—when the sheep are folded for the night—it returns with him home to his humble cottage, and there curls up underneath his chair, or sits by his side and partakes of his simple repast. Where flocks are of large extent, and have to be watched during the night, and in cases where several hundred weaning lambs, wild and capricious, demand the care of the shepherd night and day—when winter storms of snow come on, and the scattered sheep have to be hastily collected and brought to a place of security, it is then that the shepherd feels to the full the value of his dog. A circuit of miles on the dreary hills or mountain-side, or over vast and trackless downs, has to be taken, and that without loss of time; to the dog is this duty entrusted, and well does he perform his office; not a sheep belonging to his master's flock is missing—unless, indeed, any have been stolen or killed; the whole are gathered together without intermixture with the sheep of other owners.”

“We have often seen the Drover's Dogs, at their master's bidding, single both sheep and cattle from the drove, and separate them, or

drive them to some spot apart from the rest; we have seen them part the droves of two or more drovers traveling in company, which have become mingled together at a halting-place by the road side, and arrange them in order for continuing the journey; we have seen them turn back the herd from a forbidden lane or gateway, or run before and plant themselves in the way, so as to prevent any of the cattle from going astray. During his long, slow journey from the west or the north of our island to the great capital, the drover finds his dog of all-important utility; nor without this assistant could the crowded cattle in Smithfield Market be at all managed.”

The following farther extracts from the same work will be found entertaining, especially the one from Darwin's journal:

The dog is intelligent, but some breeds are far more so than others, and some individuals are elevated above their fellows. Greatly indeed does the cerebral development vary in different races (and consequently the cranial capacity relative to the rest of the skull), as may be seen by comparing the skulls together. The superiority in this respect of the skull of the spaniel over that of the bull-dog is most decided,—and it is in the spaniel, and those breeds most nearly related to it, that we observe the greatest intelligence and tractability. In the Bull-Dog and mastiff, on the contrary, the bold inter-parietal and occipital ridges of the skull demonstrate the force and volume of the muscles of the jaw and neck. It is in these dogs that we find the most indomitable courage and the most combative disposition. M. Elzéar Blaze says, “Le chien est courageux, mais son courage augmente beaucoup en la présence de son maître, soit qu'il veuille le défendre, soit qu'il se sente plus forte d'un tel appui, soit enfin qu'il veuille mériter son estime.”¹⁷ The fact is, that so utterly subjugated is the dog and so dependent on man, that he looks to his master for support and encouragement, and even the most pugnacious dogs fight more resolutely when they are encouraged by their master's voice. In South America, the large sheep-dogs which guard the flocks display courage only when in charge of the sheep. The following extract from Mr. Darwin's journal is very interesting:—“While staying at this estancia (in Banda Oriental) I was amused with what I saw and heard of the Shepherd Dogs of the country. When riding, it is a common thing to meet a large flock of sheep guarded by one or two dogs, at the distance of some miles from any house or man. I often wondered how so firm a friendship had been established. The method of education consists in separating the puppy, when very young, from the bitch, and in accustoming it to its future companions. An ewe is held three or four times a day for the little thing to suck, and a nest of wool is made for it in the sheep-pen.—At no time is it allowed to associate with other dogs, or with the children of the family. The puppy, moreover, is generally castrated; so that when grown up, it can scarcely have any feelings in common with the rest of its kind. From this education it has no wish to leave the flock, and just as another dog will defend its master,

¹⁷ “The dog is courageous, but his courage increases in the presence of his master; whether it be that he wishes to defend him, or that he feels himself stronger with such assistance, or that he desires to merit his approbation.”

man, so will these the sheep. It is amusing to observe, when approaching a flock, how the dog immediately advances barking—and the sheep all close in his rear as if round the oldest ram. These dogs are also easily taught to bring home the flock at a certain time in the evening. Their most troublesome fault when young is their desire of playing with the sheep, for in their play they sometimes gallop their poor subjects most unmercifully. The Shepherd Dog comes to the house every day for some meat, and immediately it is given him he skulks away as if ashamed of himself. On these occasions the House Dogs are very tyrannical, and the least of them will attack and pursue the stranger. The minute, however, the latter has reached the flock, he turns round and begins to bark, and then all the House Dogs take very quickly to their heels. In a similar manner a whole pack of the hungry Wild Dogs will scarcely ever (and I was told by some, never) venture to attack a flock guarded even by one of these faithful shepherds.* The whole account appears to me a curious instance of the pliability of the affections of the dog race; and yet, whether wild, or however educated, with a mutual feeling of respect and fear for those that are fulfilling their instinct of association. For we can understand on no principle the wild dogs being driven away by the single one with its flock, except that they consider, from some confused notion, that the one thus associated gains power, as if in company with its own kind. F. Cuvier has observed that all animals which enter into domestication consider man as a member of their society, and thus they fulfil their instinct of association. In the above case, the Shepherd Dogs rank the sheep as their brethren; and the Wild Dogs, though knowing that the individual sheep are not dogs, but are good to eat, yet partly consent to this view, when seeing them in a flock, with a Shepherd Dog at their head." It appears to us that the Shepherd Dog, in this instance, regards the sheep as his supporters and his care, and feels exactly what a House Dog feels when strangers or strange dogs intrude upon the premises. We have frequently seen a large dog under such circumstances retreat before one of inferior power, which he would not have done otherwise. The Wild Dogs spoken of by Mr. Darwin are dogs left to themselves, and which, like the horses and cattle, have resumed a life of independence; but perhaps they have not learned the power which union gives, and each thinking only of itself individually, fears to attack a champion who stands so boldly on the defensive. The circumstance of the dog regarding itself as one of a flock of sheep, and as the guard of those sheep,

and not the friend and servant of one master, is not without a parallel under other circumstances, in which the animal attaches itself not to one, but to a collective number of individuals, which together constitute a master. We say nothing of the Fireman's Dog, of which everybody has heard; there are other examples upon record. "In the first regiment of the Royal Guards," says M. Blaze, "we had a dog called *Bataillon*. Entertained by the soldiers at the guard-house, he always remained there; his masters changed every twenty-four hours; but that gave him no uneasiness. Sure of his pittance, there he stayed. He would follow no one to the barracks; but looked upon himself as the humble servant of twelve soldiers, two corporals, a sergeant, and drummer, whoever they might happen to be; and without being uneasy about the matter. During the night, when it froze hard, the sentinel frequently called *Bataillon*, and took his place to warm himself at the stove: the dog would have suffered death rather than have passed beyond the door. When we changed garrison, the dog followed the regiment, and immediately installed himself in the guard-house of the new barracks. He knew all the soldiers—he caressed them all, but would take no notice of those who did not wear our uniform. To this dog the regiment was a master—an individual whom he loved. His feeling was for blue dresses with amaranth facings—he despised all other colors."

It is owing to the difference among the varieties of the Domestic Dog in some respects—as in docility, strength, size, speed, keenness of scent, ferocity, &c.; and their similarity in others, as attachment to their masters, fidelity, &c.—that there is scarcely any purpose to which the dog has not been put. Like man, he follows different occupations; the Street Dogs are the lazzaroni of their race. In the earliest times, the dog, like his master, was a mighty hunter. The chase of the ferocious or of the swift was his occupation; he brought the wolf, the wild boar, and the lion, to bay; or tired down the deer and antelope. Soon, however, war became a game at which kings played, and *Væ Victis!* for war in a semi-civilized state of society is unmitigated by moderation or humanity. Then was the dog called from the chase, or from guarding against savage brutes the peaceful flocks and herds, to assist human brutes in the destruction of each other; the dog became a warrior, and a most formidable one, either in the citadel, the entrenched camp, or the battlefield. Shakspeare's expression put into the mouth of Anthony, "Cry havoc, and let slip the dogs of war!" is by no means metaphorical.—Dogs of war had long been used before, and were so long after the time of the first bald Cæsar.

Watch dogs were not only kept within the citadel of Rome, but in all the fortresses of the Greeks. The citadel of Corinth was guarded externally by an advanced post of fifty dogs placed 'en vidette' on the sea-shore. One night the garrison slept, overcome with wine: the enemy disembarked, but were received by the fifty dogs, who fought with indomitable courage till forty-nine fell. The survivor, named Soter—history has preserved his name—retreated from the field of battle to the citadel, and gave the alarm; the soldiers were roused, and the enemy was repelled. The Senate ordained that Soter should wear a silver collar, with this inscription, "Soter, defender and preserver of Corinth."

* To these dogs Azara alludes in the following passage:—"Among the dogs, the overgoers, or Sheep Dogs, are particularly deserving of notice, because in this country, where there are no shepherds, they act in the place of the latter, and take charge of the flocks. Early in the morning they drive the flocks from the fold, conduct them to the plain, accompanying them the whole day, and keeping them united;—and when numerous they surround the flock, defending them from birds of prey, from wild dogs, and other beasts, and even from man, and from every kind of injury. At sunset they conduct the sheep back to the fold, when they lay themselves down upon the ground and sleep, and pass the night in their watchful care over them. If any of the lambs lag behind, they carefully take them up in their mouths, and carry them for a time, returning again and again, if need be, until none remain."

THE SCIENCE OF BOTANY AND HORTICULTURE; HOW CULTIVATED IN OTHER COUNTRIES.

THE degree of proficiency in the science of Botany and Horticulture reached by gardeners in Europe, may be judged of by the following.

A Curator to the Botanic Garden at CAMBRIDGE, England, was to be appointed; there were many candidates, all highly recommended. The Trustees wisely determined not to appoint on the mere faith of testimonials, so easily procured in all countries, but to subject the candidates to the test of a rigid examination by Professor HENSLOW. The Professor submitted the following questions, and after the decision was made, he declared that *each* of the candidates justified the testimonials produced in his behalf.

How many are there, gardeners or not gardeners, in this country, this side of the "American Athens," who could answer them? Yet such knowledge might be acquired by *half an hour's* instruction daily, by every boy in our country schools, if conducted by *competent teachers*. But there is our great deficiency: every State ought to have an institution for the *preparation of instructors*. True, this would be expensive, but how expensive, compared with the *many hundred millions of dollars*, which agriculturists have contributed for the support of *military officers and professors*? With the latter, however, are associated the tantalizing ideas of *war and glory!* and for these, surely, a sensible, self-taxing people will forego all thoughts of improving the "dull pursuits of civil life," and all that contributes to the fruitfulness of the country and the quiet happiness of the people! "*Oh! we are a glorious nation!*" and landholders of all classes the most zealous, acute and alert in all that concerns their real, true interests!

1st. Write down as many species of the following genera as you may remember to be under culture in England, stating their country, character of the plants, whether trees, &c. description of culture, whether stove, &c. natural order:—*Berberis*, *Nymphaea*, *Cleome*, *Althaea*, *Pistacia*, *Sempervivum*, *Lonicera*, *Eupatorium*, *Vaccinium*, *Asclepias*, *Ajuga*, *Vitex*, *Croton*, *Dorstenia*, *Neottia*, *Panacratium*, *Ruscus*, *Paspalum*, *Stipa*.

2d. Name a few of the principal genera under culture, in the following orders:—*Tiliaceæ*, *Rutaceæ*, *Apocynæ*, *Scrophularinæ*, *Conifere*, *Iridæ*, *Cyperaceæ*.

3d. How do you distinguish the following orders from each other:—*Papaveraceæ* from *Nymphaeaceæ*, *Capparidæ* from *Crucifere*, *Cyperaceæ* from *Gramineæ*?

4th. Point out the difference in the structure of the fruit of the Mulberry, Raspberry, and Strawberry.

5th. Describe the seed-vessels and seeds of the French Bean, Acorn, and Maize.

6th. What are the principal causes of sterility in cultivated plants, and how would you seek to counteract them?

7th. What are the conditions essential to the germination of seeds, and what are the chemical changes effected in them during the process?

8th. Describe the functions of the leaf.

9th. Fill up the imperfect sketch of a design for the new garden, inserting the following particulars:—1st. The houses to range north and south in an open area, in the center of the elliptic herbaceous ground. 2d. Sheds and compost pits to the north between the entrance there, and the north approach to the houses. 3d. Curator's house. 4th. Separate beds for the Grasses, Ferns, and Peat Plants, away from the herbaceous ground. 5th. Arboretum. 6th. Pond in the north-west angle. 7th. Suggestions respecting the form and arrangements in the houses. 8th. General remarks upon the arrangement of a botanic garden.

THE AMATEUR GARDENER.—There is no pursuit to which man is more evidently led by the hand of his Creator than the cultivation of the ground. Our necessities render the spade and the plow of the first importance to every community, and a high or a low state of Husbandry will always be the distinctive mark of a flourishing or a declining people. In an occupation whose principal capital is industry, and whose object is the supply of our natural wants, the greater number of human beings must always be engaged. With the variations of fashion, and the mutations of ages, other pursuits, once sedulously followed, may become obsolete: but imagination cannot conceive a state of things in which the benignant stores of mother Earth will not be sought after.

The cultivation of the ground, in all its departments, manifests the high honor which is attached to human wisdom and skill by the great Lawgiver of the universe. Nature, wild and untended, will produce luxuriantly the indigenous fruits of the soil, but demands forethought and labor from her dependents, before she yields to them her most valuable riches. By observation, man has improved upon the past, and better methods of cultivation are constantly discovered. Now, in this process of induction, or the Baconian method, as it is called in philosophy, the amateur gardener has employed efforts which have often been crowned with eminent success. Those who till hundreds of acres as the means of subsistence have seldom the courage to perform experiments on a large scale: but the owner of a small garden can do so with pleasure unmingled with the fear of loss. Agriculture has thus been indebted to the lovers of gardening for many discoveries, by which the wealth of nations has been increased, and every amateur, however limited be his domain, may hope to add to the mass of knowledge. If, by the application of manure in some novel manner, or by experiments in hybridizing or crossing, a vegetable may be made more productive, the application of this principle may result in a grand national benefit. I have a great respect

for working gardeners of all grades, for this reason, that they are the silent and modest precursors of those great changes by which the vegetable property of a country acquires an enhanced value. Whether, therefore, you are delighting in an exclusive garden adjoining a country residence, or looking proudly on the beauties of a suburban retreat I thus remind you of a very important argument to be employed in the defence of your pursuits.

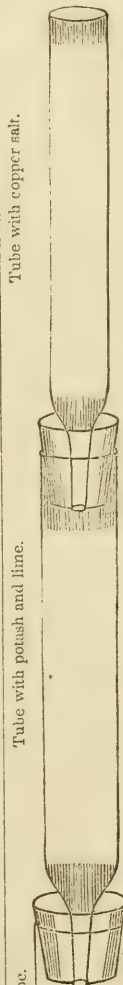
But I turn with pleasure from the objects contemplated by the spade and the plow to flowers, those luxuries of Nature, given to reward man for his obedience to the law, "In the sweat of thy brow shalt thou eat thy bread." These emblems of purity and innocence are like the bright eyes which animated the knights of the tournament, calling forth their exertions and rewarding their conquests. The matchless charms of flowers force the attention of the most tasteless of mortals, and win the hearts of the susceptible and refined. A child once said that the stars were little holes pricked in the firmament to let Heaven's glory through; a truthful idea, though linked to a physical error. Apply the same mode of reasoning to flowers, and what can they be but emanations of the beauty and happiness which reside in the mind of an Infinite Being? Their utility is less manifest than their subservency to the wants of our intellectual nature, since they appeal almost exclusively to what is refined and sentimental and poetic in our constitution. Seed is produced without the accompaniment of a splendid corolla, with its wondrous sanctuary of stamens and pistils, as in the case of all kinds of corn, so that utility is rather associated with that which is plain and unattractive. But the most glorious structures of the floral world belong to plants which, in reference to man's bodily wants, may be called useless. Trade would go on, and fortunes be made, if the world did not possess a Carnation, a Tulip, or a Rose; and yet they are here, winning our attention and riveting the emotions of our hearts. Why are they here? Doubtless to recall us from pursuits carried on in reference to our lower nature, and to lead us to that which is gentle and good. The amateur gardener is thus evidently a respectful observer of the will of Heaven, when he receives these gifts with thankfulness, and bestows on them a portion of his intellectual worship. To think lightly of Floriculture is almost to disparage the wisdom of our Maker, who calls the attention of the child and the man by enameling the earth with the rich colors and lovely forms of these universal favorites. This is a second and convincing argument which you may use in refuting detractors, and justifying yourself. You may not succeed with the former, for some men are destitute of the power of appreciating such reasonings as I have endeavored to unfold. But be contented if you are able to satisfy yourself that in loving your garden you are acting right. Hear what has been written of wild flowers, and be sure that such sentiments are still more appropriate to those who have had something to do in the production of the beauty they admire:

"Oh! chide not at the simple theme that wakes the minstrel's lay; [some by the way:]
Earth were less bright without the flowers that bless.
He at whose word the universe her ancient might did yield [the field,
Hath taught proud man a lesson from the Lilies of I thank thee, God! for every boon thy hand in mercy showers, [flowers!"]
And oh, not least among thy gifts, the beautiful wild

AMMONIA AND WATER IN GUANO.

A SIMPLE METHOD FOR DETERMINING THE FREE AND COMBINED AMMONIA AND WATER IN GUANO AND OTHER MANURES.—The want of a simple, accurate, and at the same time expeditious method for determining the amount of Ammonia in Guano has, I think, been felt by most chemists who have been engaged in the analysis of that manure for commercial purposes, where time necessarily becomes a matter of importance; and as the following method, which I have introduced into the laboratory of Dr. G. Wilson, Edinburgh, where several analyses of Guano are daily in progress under my

direction, seems to me to possess these advantages, I beg leave to place it before the notice of chemists who may be similarly circumstanced. The quantity of free Ammonia in the Guano is first determined, along with that of the Water, by the following process:—A common test-tube (about 5 inches long and $\frac{1}{2}$ wide) is taken, and in it a determinate quantity of the Guano under examination is placed; from 25 to 50 grs. will be found most convenient. To the test-tube is then joined, by means of a cork, a tube of the same diameter, but only about 4 inches long, having one of its ends contracted and drawn out, so as to pass through the cork and leave a small communicating aperture for the escape of gas from the test-tube.—A few fragments of asbestos are then placed in the contracted end of the tube, to prevent the aperture being choked up during the progress; and the tube is then filled with fragments of caustic potash, either alone or mixed with fragments of lime, which I prefer. To the top of this tube is then joined another tube of precisely similar construction, but being only about 3 inches long, and which, the asbestos being placed as before, is filled with coarsely-pounded sulphate, nitrate, or chloride of copper, previously well dried. A few fragments of asbestos are now placed on the top of each of these tubes, so as to prevent any of their contents falling out. The tubes are then weighed separately. The three tubes are then connected, and the test-tube which contains the Guano is placed in a water-bath until all moisture has been expelled.—The tubes are now disconnected, and again weighed, when the quantity of Ammonia contained in the Guano in a free state is directly determined by the increase of weight which it is found that the tube containing the copper salt has suffered, while the quantity of Water is shown by the increase of weight in the tube containing the potash and lime. The quantity of com-



bined ammonia has now to be ascertained, which is done by adding to the guano contained in the test-tube about an equal bulk of caustic lime in fine powder, and mixing well by agitation; then connecting the apparatus as before, and exposing the test-tube to a low red heat, all the ammonia is expelled and combines with the copper salt contained in the upper tube, and, as before, it is determined by direct weighing. It is very easy to judge when all the ammonia is expelled and when the operation should be concluded, as the ammonia, in combining with the copper salt, gives it, as it proceeds up the tube,

a magnificent blue color, which, when it does not extend any higher up the tube, indicates the conclusion of the operation. In the case of any other manure, where the ammonia has to be found, the operation is precisely similar to the example of guano which I have here taken. I have no doubt that with some modifications, the condensation of ammonia by a salt of copper would be found of use in organic analysis for the determination of the nitrogen; and in one or two cases where I have tried it, the results closely approximated to those obtained by calculation. [D. Forbes, Esq. in the Chem. Gaz.

GENERAL TREATMENT OF GREENHOUSE PLANTS.

THE practice of removing Greenhouse Plants into a higher temperature during the period of their growth, so well explained by Mr. Wood in his various communications, cannot be too earnestly recommended. When it is considered that in all the countries where they naturally grow, the summers are intensely hot, with clear sunny days, and heavy dews at night, how much quicker the growth of the plants and ripening of the young wood must be than can possibly happen in our dull, cloudy climate, even with the aid of glass, the universal custom of turning Greenhouse Plants out of doors indiscriminately in the month of May, is doubtless one of the very worst modes of treatment that can possibly be adopted, especially when, as is often the case, they are placed in some shady situation; at this period many are just beginning to grow, others have made some progress, but few or none are within many weeks of terminating their growth and ripening their young shoots, and it is very uncertain whether any of them, under such circumstances, even in the most favorable seasons, will accomplish their growth, consequently when the time arrives for housing, it will be found that three-fourths of them are still in a growing state, and now, when the short, cold, cloudy days have set in, they will continue to grow for weeks, and even months after being brought into the Greenhouse.

This mode of treatment can only end in disappointment; at the time they ought to be loaded with flowers there may certainly be a few solitary blossoms, but anything like a full crop is entirely out of the question. It is remarkable that Camellias appear to be the only family of plants that are rightly treated in this respect; it does not seem to occur to many gardeners that all other hard-wooded Greenhouse Plants require exactly the same treatment as Camellias; but instead of so doing, at the very time the latter are carefully shut up in a higher temperature, to encourage the growth and ripening of the young shoots, as the means of ensuring a fine display of flowers, all, or nearly all, the others are turned out of doors to take their chance of a hot or a cold summer, as the case may be.

When Greenhouse Plants are housed for the winter, then is the time to judge whether they have been rightly treated. If such is the case, they will mostly have finished their growth; the young shoots will have changed from a green to a red or brown color, and of a hard, firm texture, and the flower buds of many swelling out prominently, ready to start into flower with the slightest excitement, rendering the forcing them into flower at any time when required an easy and simple matter. Not only Camellias, but Acacias, Boronias, Azaleas, Epacris, Corraeas,

and in fact almost every kind of Greenhouse hard-wooded Plant, should be at rest, and ready to start into flower when the proper period arrives. On reading the Reports of the London Horticultural Exhibitions we are often surprised at the large dimensions of many of the plants therein mentioned, especially when we read that many of them are only two or three years old! There cannot be a doubt that this is accomplished by placing them in a strong genial heat, at certain periods, and will serve to show what can be effected in a short time under proper management.

Although the treatment recommended above is applicable to all hard-wooded plants, there are some beautiful things that will not thrive at all unless they are annually placed in a higher temperature to make their growth, and for want of such treatment are rarely seen in good health. *Crowea saligna* is a striking instance of this neglect, as it is generally seen starving in Greenhouses all the year round; instead of which it should be removed to the plant or pine-stove in January, and allowed to remain till May or June, when it will grow like a willow, making shoots from 8 to 16 inches in length; and when removed to the Greenhouse it will continue to flower all through the summer, a perfect gem, with flowers twice the size we generally see it produce under the ordinary treatment it receives.

As early as the month of January attention should be directed to such plants as have done flowering and are beginning to grow; these should be removed to a higher temperature without delay, and if necessary, it is the best time to shift them into larger pots, and when the young shoots have grown two or three inches in length and taken off with a heel, they will strike root better than at any other time. By attending to the gradual removal of the plants all through the spring months, and when having completed their growth, gradually to harden them for a week or two, and when ready to be placed out of doors for the summer, they may then, with perfect safety, be placed in a shady situation, and remain out as long in the autumn as they may be safe from severe frost. In large establishments a house entirely devoted to this purpose would be very useful; where this is not the case vineries, pine stoves, pits, &c. may all be made available, and without much inconvenience, for this purpose, and even a brick pit without artificial heat, if kept pretty close, would be very useful in forwarding the growth of palms. I have been induced to dwell at some length on the above subject, from a firm conviction that it is not so generally or extensively put in practice as it deserves to be.

Robt. Reid, Noble Thorp.

The Plough, the Loom, and the Anvil.

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No. 4.

HEAR BOTH SIDES.

WE invite the particular attention of our readers to the following statement of *facts* furnished by the commercial correspondent of the *Washington Union*, with a view to prove the superiority of the system of 1846, which looks to the exhaustion of the land and its owner, over that of 1842, which looks to bringing the loom and the anvil to the side of the plough and the harrow, thus making a market on the land for its products, and enriching the land and its owner. Having studied it carefully, we invite them next to study *the real facts* that we shall lay before them, and then to judge of the merits of a cause requiring for its support so unblushing a violation of truth as is here exposed:

"It is when the people of a country *consume* more of the produce of their own labor that their prosperity is greater. Take cotton in the year 1850. The quantity of cotton consumed in the United States was reported at 598,269 bales, which, at 400 lbs., gives 239,307,600 lbs., or very nearly the quantity consumed in Great Britain in 1832. Under the protective system, at the usual estimate of three yards to the pound, the produce in the two countries, with the quantity exported, will stand thus:

	Pounds consumed.	Equal to yards.	Yards exported.
England, 1832,	259,412,463	778,237,389	668,044,503
United States, 1850,	239,307,600	717,922,800	94,888,480

"The number of yards exported from the United States is not given officially, but the value in 1850 was \$4,744,000, which, at twenty yards to the dollar, gives the number of yards in the table, from which, if we deduct the yards of foreign manufacture consumed, there remains nothing. So that while England *exported* ninety per cent. of her production, the United States *consumed* the *whole* of an equal quantity produced. The progressive consumption of cotton in the United States is thus displayed:

	Cotton consumed, pounds.	Value exported.	Value imported.
1842-46, - -	593,390,400	\$13,995,739	\$43,172,559
1846-50, - -	1,123,218,800	16,468,178	64,931,291
Increase, - -	429,828,400	\$5,472,439	\$21,758,732

"Thus, then, the quantity of raw cotton taken for consumption has increased seventy per cent., the import of foreign cotton fifty per cent., and the export of domestic cotton forty per cent. In the four years of the present tariff, therefore, the consumption of cotton goods has increased in the United States probably to nearly as great an extent as iron, of which the consumption of the home manufactured article has increased perhaps more than any other. In the United States, the freedom from internal restraints upon intercourse, and

modified restrictions upon foreign trade in the last four years, have permitted the people—the workers—to consume a larger portion of the products; and it was hoped from the revolution that France would experience also a commercial emancipation, which should, by permitting her people to consume more, and capital and office-holders less, confer greater remuneration upon every branch of industry. That this will be the case—that France, under universal suffrage, extended education, and commercial emancipation, will become an important customer for United States produce—there is every hope.”

“It is,” says our author, “when a people *consume* more of their products that their prosperity is greater.” We are thus offered a test by which to try the different systems, and if we cannot show that the people *consume* more under the system which looks to create a market on the land for all the products of the land, than they do under that which teaches that the farmer should exhaust his soil and waste his capital by sending all the produce of his land to distant markets, we shall hold ourselves ready at once to abandon the cause of the farmers and planters, and undertake to teach our readers the advantage of impoverishing themselves for the maintenance of the fleets and armies of England, as is now being taught by the *Union* and its contributors.

The readers of that paper are here assured that under the tariff of 1846, the consumption of cotton has increased *seventy per cent.* Of the value of such statements, and of the strength of the cause which needs such falsification, our readers will judge, when they shall have examined the following account of the growth of the domestic consumption, drawn from the highest and most authentic sources:—

In the last year of the Compromise tariff it had been only	-	bales	267,850
It had grown in 1846-7 to about	-	-	470,000
And in the following years, 1847-8, during which the potato rot and British railroad speculation had rendered the tariff of 1846 totally inoperative, it reached a total, North and South, of	-	-	606,000
Thenceforward the progress was arrested, for the destructive tariff of 1846 had become operative. The total consumption, North and South, of 1848-9, is stated in the <i>New-York Shipping and Commercial List</i> , at	-	-	618,039
That of 1849-50, at	-	-	595,269
And that of the year 1850-51, just closed, may be set down, on the same authority, at	-	-	464,168

The *Northern* consumption of 1844-5 was 389,000 bales, while that of the past year has been but 404,000, and thus has it gone back almost to the period at which it stood six years since. That of 1848-9 was 518,000 bales, and thus has it gone back from the point at which it stood two years since, to the extent of 114,000 bales, when it should have doubled.

The Southern and Western consumption of 1848-9 was estimated at 110,000 bales, and that of the following year at only 107,500; whereas it is now but little more than one-half, or *only sixty thousand*, and the total is less than that of the last year of the tariff of 1842—that of 1846-7—although there has been a growth of population amounting to *fifteen per cent.*; and yet our author gravely assures his readers that under the tariff of 1846 the domestic consumption of cotton has grown seventy per cent. It is really to be regretted that persons having any claims whatever to character should put forth statements so utterly fraudulent.

From 1842-3 to 1846-7 the domestic consumption grew from 267,000 to almost half a million of bales, being an increase of above eighty per cent. while the population grew about thirteen per cent., and thus the increase of the former was six times more rapid than that of the latter. From 1847-8, when the tariff of 1846 began to become operative, it has fallen from more than 600,000 bales to less than half a million in 1850-51, a period of three years in which population has grown about ten per cent., whereas an

increase similar to that observed under the tariff of 1842 would have carried it up to little short of a million. The power of a people to *consume* their own products having been established by our author as a test of their prosperity, we would desire him to explain how it was that that power grew with so rapid a growth under the tariff of 1842, and how it has been that it has so rapidly declined under that of 1846—instead of increasing seventy per cent., as he would have his readers to believe has been the case.

Desiring to satisfy our readers in regard to the manner in which the tables of our author are manufactured, and thus to convince them of the fact that these British free-trade statements are not in any manner to be relied upon, we invite them to an examination of the following facts. In the first place, the consumption of 1849-50 is given by the *Union's* correspondent as that of 1850, to the exclusion of that of the year 1850-51 now just closed, and the reason for so doing is that it is only now, that the operation of the tariff of 1846 is becoming most fully obvious in the closing of the mills and furnaces of the Union, and in destroying the power of consumption, the true test of prosperity. By taking the one year he obtained, as our readers have seen, the quantity of 598,269, whereas, had he taken the consumption of the crop of 1850, he would have obtained one of only 464,168. That, however, would not have suited his purpose.

Again, the consumption of 1842 to 1846 is, as is seen, put down at 593,390,400 lbs. And that of 1846-50 at - - - - - 1,123,218,800 "

Being thus given in the lump, few readers can detect the falsity of these statements, and therefore do we desire particularly to call to the following figures the careful attention of our readers.

The consumption of 1842-3 was	-	-	-	-	-	-	-	325,000
" 1843-4 "	-	-	-	-	-	-	-	347,000
" 1844-5 "	-	-	-	-	-	-	-	389,000
" 1845-6 "	-	-	-	-	-	-	-	453,000
								1,514,000

At *four hundred pounds* per bale, this would give about six hundred millions, or nearly the quantity set down by our author.

The consumption of 1846-7 was from	-	-	-	-	-	-	-	470,000
" 1847-8 "	-	-	-	-	-	-	-	606,000
" 1848-9 "	-	-	-	-	-	-	-	618,000
" 1849-50, here set down at	-	-	-	-	-	-	-	598,206
								2,292,206

At *five hundred pounds* per bale, these would give 1,146,103,000 pounds, or very nearly the quantity set down by this advocate of the maintenance of the British monopoly. It would thus appear that in order to obtain the desired superiority of the one system over the other, *twenty-five per cent.* has been added to the *weight of the bales*, and in no other manner can be obtained; for the number of bales consumed is here given, except in the single case in which we have taken our author's own figures, on the highest authority in the Union.

This, however, is not all. The tariff of 1846 came, nominally, into operation in December, 1846, although its real effects had scarcely commenced even two years afterwards. To cover the ground, the year 1845-6 is set down as 1846, and 1846-7 is transferred to the new account. It is, however, well known that every mill at work in 1846-7 had been built in 1846 or earlier, and that scarcely a single one was in operation even in 1847-8 that had not been commenced to be built before December, 1846. Equally well is it known that the crops which paid for the consumption of 1847 were raised in 1846, and that, therefore, for every reason, the true place for 1846-7, and even for 1847-8, is under the tariff of 1842; but this did not suit the purposes of our author. It was necessary to

give from June, 1846, to June, 1847, constituting the fiscal year 1846-7, to the tariff of 1846, and so he has done.

Again, the consumption grew upwards from 1843 to 1847, and from 1848-9 it has grown downwards, proving that the power to consume grew under protection, and that it has diminished with the withdrawal of protection—thus:—

CULMINATING POINT.

	1847-8—606,000	
	1848-9—618,000	
1846-47—470,000		1849-50—598,207
1845-46—453,000		1850-51—464,168
1844-45—389,000		1851-52—
1843-44—347,000		1852-53—
1842-43—325,000		1853-54—

To state the facts thus would have been conclusive against the policy of the tariff of 1846, and therefore it became necessary first to appropriate—we were disposed to use a harsher word—the whole consumption of the crop of 1846 and that of the crop of 1847—next to add twenty-five per cent. to the weight of the bales—and then to take the averages, thus setting off the year of exhaustion, 1842-3, when the free-trade provisions of the Compromise had produced universal ruin, against the prosperous years 1846-7 and 1847-8, when protection had brought up the consumption of iron from three hundred thousand to almost a million of tons! A system of fraud so universal as that practised by our free-traders, whose every thought is given to the maintenance of British *monopoly* as a certain means of reaching *free trade*, has rarely, we think, been seen. Scarcely an honest figure comes from any one of them, so far as we have an opportunity of judging of their statements. If they talk of the tariff of 1846 and its effects upon the power of production or consumption, they use false figures, and apply a magnifying glass even to them. If they talk of the same effects as observed in the working of the tariff of 1842, they commence by using false figures, and then reverse the glass that even they may be diminished. Such are the practices of the men who denounce as an “exploded fallacy” the doctrine of Adam Smith, that the farmer and planter are to be enriched by making a market on the land for all the products of the land.

Their consciousness of the error of the system which looks to the maintenance of the British monopoly, is clearly proved by the mode in which their tables are invariably arranged. The advocate of the American system prefers in all cases to take the latest years of protection, because as the system becomes operative its benefits become from year to year more obvious; and thus it is that 1845-6 is preferred to 1844-5, and 1846-7 to any of the previous years of the existence of the tariff of 1842. They never manifest a desire to include 1841 or 1842. With their opponents the case is directly the reverse. They prefer the early years to the exclusion of the later ones, because from year to year the evils of their system become more manifest, and thus it is that they insist on impressing 1846-7 into the service of the tariff of 1846, while excluding 1850-51. If their doctrine were correct, they would find trade gradually increasing as their tariff became more operative, and the last year should far exceed the first, and they would be as anxious to exclude 1845-6, the last of the years of protection, as the advocates of protection are to exclude 1842, the last of the years of free trade. In the fact that they invariably claim the last year of protection as a year of free trade, and then seek to make up the deficiencies of other years by taking averages, may, as we think, be found conclusive evidence that they are fully aware of the destructive character of their system.

In 1846 we were assured that protection enhanced the prices of commodities to the whole extent of the duty, and that by adopting free trade our exports would increase so much that our farmers and planters would be so greatly enriched that they would

become greater consumers of all the commodities needed for their comfort and enjoyment. It is clear, however, that so far as the power to consume is manifested by the production of domestic cottons, the reverse is found to be the fact, and we are steadily losing all that we had gained in the period in which the farmers and planters were protected in their efforts to attract the loom and the anvil to the side of the plough and the harrow. This, however, is not all. Diminished as is our power of production, that of consumption has diminished even more rapidly, as is shown by the increased necessity for seeking abroad a market for the products of our spindles and our looms. We have not before us a statement of the quantity of domestic cotton goods exported, nor of their annual value, and must therefore depend upon the figures of our author, suspicious as we, in all cases, hold them to be. From 1842 to 1846, the total value exported he sets down at \$13,995,739, giving an average of three millions and a half of dollars per annum, and at that time a dollar would give perhaps fifteen yards, making the export somewhat over fifty millions of yards. In the years 1849-50, the export is set down at little short of a hundred millions of yards; and from various statements we have seen, we are disposed to think that that of 1850-51 has been still greater. Admitting it, however, to have been no more, we have a diminution in the manufacture of cotton to the extent of a hundred and fifty thousand bales from the height to which it had been carried during the existence and under the influence of the tariff of 1842, while the export of the cloth made from that cotton has almost doubled. It is clear, therefore, that the consumption of cloth declines even faster than the production. How far the deficiency is made up by importation we may now examine.

In 1840 we imported but twenty millions of yards of cotton goods, being only one third as much as we had imported nine years before, in 1831, under the highly protective tariff of 1828. In 1842-3 it fell to less than nine millions. In 1845-6 the quantity had quadrupled, the number of yards of plain and printed calicoes imported having been 36,800,000. The quantity exported to this country in the first six months of 1850, as given in Burns's Commercial Glance, the highest authority, was 39,571,000 yards, and with a similar import for the second half year, the total quantity would be about eighty millions, giving an increase of forty-four millions in the import against an increase of fifty millions in the export, and the weight of the additional cloth exported was probably double that of the additional cloth imported. It is obvious, therefore, that even in that year there was a very large decrease in the domestic consumption of cottons, foreign and domestic, notwithstanding a considerable increase of population.

The first six months of the present year are given in the same document at 27,650,000 yards, giving probably for the year a total of fifty-five millions of yards, to set off against an export of almost a hundred millions; from which it would appear that our present total consumption must be greatly less than half a million of bales, although of the crop of 1847 we not only worked up

-	-	-	-	-	-	-	-	-	-	606,000
but we consumed of foreign cottons, over and above the export of domestic ones,										
not less than	-	-	-	-	-	-	-	-	-	25,000

Total quantity,	-	-	-	631,000
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And that therefore, notwithstanding the great growth of population, the consumption has fallen about twenty-five per cent., or *one hundred and sixty thousand bales*. Nevertheless, our author, by dint of selecting his years and increasing the weight of the bags, was enabled to exhibit an increase of seventy per cent. !

We now most particularly desire to call the attention of our readers to the fact, that the import of cotton goods grew rapidly under the tariff of 1842, and that in the years 1845-6, when the manufacture was rapidly growing, the value imported was \$13,500,000, or within \$1,680,000 of the import of 1848-9, when the manufacture had become stationary. In the following year, 1849-50, there was an increase of more than four millions of dollars to set off against the fact that the domestic consumption of cotton, instead of increasing, had declined twenty-five thousand bales, capable of producing five millions

of dollars' worth of cloth; but it has not been until the present year that the full effect of the tariff of 1846 has become obvious in the rapid decrease of domestic production, attended by a rapid decrease of the power to consume cloths of any description, either foreign or domestic. The falling off in the present year in the export to this country would appear from the tables just now published to be about twenty-five millions of yards, and this is accompanied by a diminution in the domestic consumption amounting to more than a hundred and thirty thousand bales. If, then, when a people *consumes* most of its own products it is most prosperous, the prosperity of the country must have been far greater under the tariff of 1842, when consumption increased at a rate six times faster than population, than now when it diminishes from year to year, notwithstanding the great increase of population.

A system more utterly destructive of the interests of the planter than the present one can scarcely be imagined. The great market—the one that grows with most rapidity when *permitted* so to do—is cut down to 464,000 of bales, when it might and would have grown to a million, and the consequence is seen in the fact that the first bale of new cotton has been sold in New-York at *nine and a half cents*, when last year it would have commanded *fifteen and a half*. If producers of cotton desire to learn why this is so, let them study carefully the fact that the domestic consumption has diminished one hundred and sixty thousand bales, while we have added from two to three millions to the population.

A reduction of six cents per pound is equivalent to thirty dollars per bale; and the crop being taken at two millions and a half of bales, it follows that the total reduction is seventy-five millions of dollars; and the cost of raising being precisely the same in the one case as in the other, it follows that the power of the planter to accumulate wealth is diminished probably five sixths.

Such being the case, it would seem to be important that the planters should study for themselves the causes of such extraordinary variations in the price of their great staple, and the cause of the great fact, that while possessing almost a monopoly of the supply of it to the world, they are perpetually compelled to sell at prices so utterly ruinous, and promising to be more so, if the crop continues to grow and they continue to prevent a corresponding growth in the market for it. Desiring to enable our readers to examine this important question, we submit the following figures, to which we invite their careful attention:—

Crop of	Domestic consumption.	Left for export.	Average prices.
1838-39,.....	1,360,000	276,000	14 cts.
1839-40,.....	2,177,000	295,000	8
1840-41,.....	1,634,000	297,000	10
1841-42,.....	1,683,000	267,000	8
1842-43,.....	2,378,000	325,000	6
1843-44,.....	2,030,000	346,000	8
1844-45,.....	2,394,000	389,000	6
1845-46,.....	2,100,000	452,000	8
1846-47,.....	1,778,000	468,000	10
1847-48,.....	2,347,000	606,000	7½
1848-49,.....	2,728,000	625,000	6½
1849-50,.....	2,096,000	595,000	11
1850-51,.....	2,350,000	464,000	1,886,000

How entirely the price is dependent upon the quantity to be exported, and upon the amount of power granted to the British manufacturer over the crop may be seen from the following facts:—

When the surplus for which a market was to be sought abroad			
was under 1,100,000 bales, the price was	-	-	14 cts.
" " 1,400,000 "	"	-	10
" " 1,700,000 "	"	-	8
" " 1,800,000 "	"	-	7½
And whenever it exceeded 2,000,000 it fell to	-	-	6

To this rule there are slight exceptions, resulting from the actual or supposed deficiency of previous or subsequent crops. Thus, in 1839-40, the excess was 1,882,000 bales, and the price fell only to 8 cents, because of the remarkable deficiency of both the previous and subsequent crops. In 1848-9, the surplus exceeded 2,000,000 bales, but the price fell only to 6½ cents, because of the great deficiency of the following one; and the latter was maintained at an average of 11 cents, by the most exaggerated reports of disasters to the growing crop, which could not, as it was asserted, exceed 1,800,000 bales, whereas it proved to be almost two millions and a half. With a view to eliminate, as far as possible, these causes of error, we give the average surplus for each pair of years, and the average prices, as follows:—

	Aver. surplus for exportation.	Aver. price.	Aver. surpl.	Aver. price.	Aver. product.
1838-39, and 1839-40,	1,483,000	11 cts. }			
1839-40, " 1840-41,	1,609,000	9 }	1,490,000	9½ cts.	\$71,500,000
1840-41, " 1841-42,	1,376,000	9 }			
1841-42, " 1842-43,	1,739,000	7 }			
1842-43, " 1843-44,	1,870,000	7 }	1,820,000	7	64,000,000
1843-44, " 1844-45,	1,846,000	7 }			
1844-45, " 1845-46,	1,827,000	7 }			
1845-46, " 1846-47,	1,479,000	9 }			
1846-47, " 1847-48,	1,526,000	8½ }	1,682,000	8½	70,900,000
1847-48, " 1848-49,	1,924,000	7 }			
1848-49, " 1849-50,	1,800,000	8½ }			

The crops of the second period exceeded those of the first by an average of nearly half a million of bales per annum, but the growth of the domestic consumption absorbed about 700,000 additional bales, and the consequence was that the surplus which required to seek a market abroad exceeded that of the first period by only 330,000 bales per annum; and to this it is to be attributed that the fall of prices was not much greater. The quantity grown in the four years from 1842-3 to 1845-6, and that grown in the four years from 1846-7 to 1849-50, has been almost precisely the same, to wit, 8,900,000 bales in each period; but in consequence of the growth of domestic consumption, which continued during much of this period, and a part of which is still maintained, the average quantity for which we needed to find a market abroad was less by an average of 138,000 bales in the third period than in the second, and the consequence was a rise of price to an average of 8½ cents. The year just closed has exhibited an increase of crop and reduction of domestic consumption, rendering it necessary to seek abroad a market for almost 1,900,000 bales, the consequence of which is now seen in the fact that prices have fallen to about the standard of the great crops of 1847-8 and 1848-9, with every prospect of a further fall unless the growing crop should prove less than has been anticipated.

We would now beg our cotton-growing readers to reflect what would have been their condition in this last period of four years, had the cotton and woollen and iron manufactures been permitted to go ahead as they were doing, and had we found it necessary to look abroad for a market to the extent of only a million and a half instead of almost seventeen hundred thousand bales, enabling them to obtain ten cents per pound, or fifty dollars per bale, and giving them seventy-five millions of dollars for the quantity exported, while giving them twenty millions additional for the quantity consumed at home, thus making a difference of at least twenty-five millions of dollars. Would not this *difference* have paid for nearly all the cloth and iron they consume? It would; and yet it constitutes but a small portion of the gain that would result to them from making a market on the land for the products of the land. Had the tariff of 1842 remained, the domestic consumption of cotton would now absorb almost a million of bales, and the price of the remaining million and a half of last year's crop would have exceeded one hundred millions of dollars. Had such been the state of things, the European would have been forced to come here to buy, instead of the planter being forced to go abroad to sell; and

the difference between the two is, that in the one case the European manufacturer would have been obliged to seek to purchase, and the planter would have fixed his price, whereas in the other the planter seeks to sell, and the English manufacturer fixes the price for himself, and for all the world. The man who *must* go to market pays the cost of transportation to market, but he who is not forced to go to market will find the cost of transportation paid by others. The way to relieve the planter from the *necessity* for seeking a market is to make a market on the land for all the products of the land, as was being done by the tariff of 1842. The way to deprive him of the *power* to determine where he will buy, or where he will sell, is to close the mills and furnaces and mines of the country, as is now being done by the tariff of 1846.

In our next we shall lay before our our readers a further specimen of the truthfulness of the statements of this correspondent of the *Union*; but before proceeding farther, we desire to call their attention to the extraordinary absence of any thing like consistency in the views of these admirers and supporters of the system by aid of which Great Britain seeks to secure to herself a monopoly of the manufactures and trade of the world. But a few months since we laid before them an extract from a paper by this very writer, exhibiting in full relief the absurdity of this monopoly system, as follows:—

“What a strange absurdity it is to see silk going from China and France, cotton from the Southern United States, wool from Australia, coffee and sugar from Brazil, wheat from New-York, Michigan, Odessa, and Poland, hemp and flax from St. Petersburg, pork and lard from Ohio and Illinois, concentrating in Lancashire, to be returned in goods to the localities from whence they came! Such a state of things never could have been brought about but for the geographical position of England giving her the control of the ocean.”

In the columns of the *Union* we find, invariably, this same person urging upon the people of this country the advantage that must result from sending to Europe the flour, the pork, and the cotton of the valley of the Mississippi, thence to be returned, in the form of cloth, to the places from whence they came; and yet it is to him, and others like himself, that we are told to look for true politico-economical science. From hour to hour they contradict themselves, and yet they talk of “the exploded fallacies” of their opponents!

GREAT PACKING OF FLOUR.

“In Fitzhugh & Co.’s mill, at Oswego, N.Y., quite an operation in packing flour was performed one day, which, the *Journal* of that city says, is probably without a precedent. Four men, with the aid of the old-fashioned packing apparatus, in seven hours and thirty-five minutes packed six hundred and fifty barrels of flour! This includes heading-up, ready for shipping. Can any other flouring-mill equal this? None of the machines can do any thing like it.”

If our readers desire to see this exceeded, we would beg to refer them to the letter of Mr. William Brown, member of the British Parliament, published in our last number, and they will find it far exceeded. Mr. B. there assures his friends that they are the greatest of all the exporters of food in the world, and that they are so *because they place the food in that wonderful compressing machine, the human stomach*, to nourish and support the men who are employed in converting the cotton and the wool into cloth, and the coal and the ore into iron, and that thus it is that they are enabled to send their food to all the world. The Illinois farmer sends his corn to market, obtaining for it fifteen

or twenty cents a bushel. It travels to Liverpool, where it sells at sixty or seventy cents a bushel, and then having been packed away according to Mr. Brown's receipt, he buys it back again at two or three dollars a bushel; and thus it is that he is to be enriched by British free trade!

ON THE AGRICULTURE OF NOTTINGHAMSHIRE, ENGLAND.

[Continued from p. 149.]

SECOND YEAR.—BARLEY.

OF late years it has been common, from the very low price of barley, to sow all the early cleared turnip land with wheat, either as soon as the turnips are eaten, or during the succeeding month of February. This practice appears to some persons open to objection. If half the turnip land is sown with wheat instead of barley in each year, it will in due time bring the whole of the land to produce wheat three times instead of twice in eight years, or during every two courses; and whether the weak soils of this county are capable of supporting the practice permanently is the point on which some cautious minds demur. That it is desirable for all land to have as frequent change of cropping as possible, so long as such change is attended with profit to occupiers, none will venture to deny. The respective prices of the two kinds of grain for the time being will go far to determine for or against the practice. And whilst farmers, who have made so great an outlay on their turnip crop, can, as we have known to be the case, grow forty bushels and upwards of fine wheat to the acre, instead of perhaps as much barley—worth only two thirds the price of the wheat, and with far less risk of being spoilt in the harvesting—they will not fail to regard present profit notwithstanding a contingency of future loss.

The land intended to be sown with barley is ploughed as soon as cleared of the turnips, to prevent waste by evaporation of that manure which has been left by the sheep, and also its being washed by heavy rains irregularly upon the surface. The land should then have a second ploughing before the barley is sown, as it is found to ripen more equally after two ploughings than one, and also, we think, to withstand the drought more effectually if the following summer should prove a dry one. The season of sowing seldom commences before the 20th of March, and even that is earlier than many will sow, lest the frosts should injure the plant when young. The largest breadth is sown during the early part of April; the season continues, however, up to the month of May, but the quality of the produce is mostly inferior when sown thus late. The most generally approved kinds of seed are the Welsh and Chevalier. The quantity of seed sown varies with the mode of sowing; if sown by hand, which is the practice of many, upon the common furrow, and harrowed in by the drag-harrow, from 14 to 16 pecks an acre are used; but if drilled, not more than 22 pecks are necessary.

THIRD YEAR.—GRASS SEEDS, OR CLOVER.

The grass seeds are sown most frequently at the same time with the barley, although the prudence of the custom is, we think, questionable, and has not received the consideration that it deserves. It is said that if seeds are sown thus early with the barley they take so much better than if sown latter; and the practice is, on that ground, defended, without, perhaps, at all weighing the serious injury that is occasioned to the barley by such rampant

growth of various plants at its roots. Is it not probable that the exuberant growth of clover, and its accompanying grasses, is equally hurtful to the cereal crop, whether wheat or barley, with the exuberant growth of so many weeds, if they were permitted, but which are, by all good farmers, carefully removed? Another great evil in allowing the clover to make so much head arises from the increased difficulty of harvesting well the barley crop. Now, by drilling in the barley in the first instance, and when it well covers the ground to hoe in the clover seeds, will, in our humble opinion, in most seasons be found far better as regards the grain crop, and not in the end much worse as relates to the seeds. Of red clover 12 pounds, with half a peck of ryegrass, to the acre, is generally found sufficient. For summer pasture is required of white or Dutch clover 10 pounds, with 2 pounds of rib-grass, and 2 pounds of trefoil, accompanied by 2 pecks of dwarf rye-grass.

The season for cutting the early sown barley is rarely retarded beyond the last week in July or the first in August. This is most commonly done by the scythe, which is followed by a woman, who gathers the mown corn into sheaves by means of a rake having three or four long iron teeth; she places the sheaf upon a straw band, made usually by one of the children. The man then binds the sheaves, and, as he returns to the point from which he started, the woman carries his scythe. In this manner an active family will clear five roods in the day, for which they receive from 5*s.* to 7*s.* 6*d.* an acre, according as the crop may be light or heavy, including the stooking and raking afterwards.

From the more than ordinary scarcity of pasturage which the occupier of these dry soils has to contend with during the months of August and September, he is generally obliged to stock the young clover during the autumn, and perhaps, if not eaten too low, it may be benefited by the treading of sheep, more than injured by the pasturing. It is, however, the invariable custom to clear the ground before the severe frosts come on, and to allow nothing to go upon them until the following spring, when they are required for the ewes and lambs. With these they are, in most cases, stocked; and when an allowance of half a pound of linseed-cake to each ewe is made, they will often carry five or six ewes and their lambs to the acre up to weaning time, but the number kept depends much on the moisture of the season. The red clover is generally mown for fodder for the working horses during the winter months, the after crop being reserved for the lambs when weaned. The propriety of pasturing lambs on the second crop of red clover has been much debated, as great losses frequently ensue from it; such, in particular, has been the case on some farms during the present year. It has been suggested, and we think with good reason, that the danger arises from its being done when the clover is too young, which induces flatulency and disorder of the stomach and bowels, and ends in diarrhoea, which often proves fatal to lambs at that season of the year.

It has been almost the universal practice to allow the grass seeds to remain down for pasture two years, and often longer, before the land is ploughed up for wheat. An opinion now, however, prevails in favor of ploughing it up after one year, as it is found that as much wheat can be grown after one year's seeds as upon those of longer growth, which, perhaps, may be accounted for on the ground of the fibrous roots of such seeds as are the growth of one year being sufficient for the support of the succeeding wheat crop; whereas, when of longer standing, a season commensurate is required before the roots can decompose, and become available matter for the support of other plants. The red clover is seldom allowed to remain down longer than one year,

doubtless from the circumstance of its deteriorating more than the white after that time.

FOURTH YEAR.—WHEAT.

The season for sowing wheat on the warm soils of this district commences now much later than it formerly did. Very little is sown before the last week in October, but November is the principal month for this important operation. The customary mode of preparing the ground is by ploughing and pressing the clover ley, one presser following two ploughs. There is no neater mode of performing the work when it is well done. It is, nevertheless, objected to by some good farmers, on the ground that the grass is liable to grow up between the furrows, so as to interfere materially with the after growth of the wheat. The almost universality of the practice in the district seems to furnish an argument against that objection. It has, however, been met more effectually by a plough invented some years ago by Mr. Hodgkinson of Morton Grange, which is termed a "skim-coulter plough." The advantage he proposed was, that it should take off a thin furrow from the surface before ploughing the main one: the sward would, by that means, be effectually disposed of by being thrown to the bottom of each furrow, and could not grow through to the injury of the wheat. The whole is performed by one plough, which requires four horses. Its adoption would certainly increase the labor of the wheat seed-time, but it would, at the same time, carry out a most important principle of good farming, we mean that of deep ploughing, (to which it is, undoubtedly, a preliminary step,) on almost every kind of soil. Deep drilling follows of necessity on deep ploughing, which is an object of the last consequence on soils liable to suffer from drought.

The quantity of seed sown is regulated by the quality of the soil, less being required where the soil has strength to cause it to tiller during the winter months. Few sow less than 9 pecks to the acre, and on the light soils as much as 12 pecks is sown. The amount of seed is a subject that has been too often discussed to leave room for much that is new to be said upon it. We may, nevertheless, observe that custom in this district has fixed upon about 10 pecks an acre as the most desirable quantity. If sown thick the ears will be small, and the yield, regarded individually, will be found defective. If, on the other hand, it is sown not thick enough, an increased expense is incurred in hoeing to keep down the weeds, and nature, in seeking to supply what is wanting, will continue to throw out, as the roots gain the requisite power, a succession of ears until so late in the season that it will be impossible for the crop to ripen uniformly; the inevitable consequence of which will be an undue proportion of small and defective grain in the produce.

White wheat in its several varieties is almost exclusively sown on the sands, and the one which for some years has taken precedence of all others, at least in the northern part of the county, is "Hunter's White Wheat," in favor of which so strong a feeling exists, that it is thought by many to be unequalled for this soil and climate. So great is its popularity, that it is extending its fame generally throughout the cold soils of the clay districts, on which at one time white wheat was seldom or never attempted to be grown. It is held in high request also by the millers, from whom it commands the best price. It would be difficult to give a decided opinion on the average produce of the wheat crop; but we may nevertheless state, that on well cultivated farms of ordinary quality it is seldom below 30 bushels an acre; and on the higher farmed land of good quality, not much, if any below 40 bushels.

Of barley, the fluctuation in produce is greater as the season suits it or otherwise. On the average, it may be stated at $4\frac{1}{2}$ quarters, although in some instances a field will yield 7 or 8 quarters an acre.

The harvesting of the wheat crop is now more frequently done by the scythe than by the sickle. The work is performed as described in the harvesting of barley. Mowing has several advantages over reaping with the sickle. It is cheaper, far more expeditious, and clears the ground at once of all stubble and weeds. If well done, the grain is found not to suffer so much in wet weather as when reaped by the sickle, which may be easily accounted for by its being looser in the sheaf, which allows the rain to pass more easily through it. From the same cause it admits more freely the sun and wind, and is in consequence sooner ready to carry. A strong prejudice existed for some years against the practice, but it has now given way, the advantages being too decided to be any longer doubted. The price is from 6s. to 8s. per acre, and occasionally 9s. may be given, which includes mowing, taking up and binding the sheaves, as well as taking up and binding the rakings.

Oats are not much sown on the sand lands; a crop is sometimes taken after two years' grass seeds, as fodder for the working horses; the land being afterwards manured and sown with wheat. In general, two white crops in succession are opposed to good farming; but when the land is in high condition, and obtains an extra dressing of manure as compensation, it cannot reasonably be objected to.

Peas both white and gray are occasionally sown in the place of the red clover crop, under an impression that the land in the following course will be more certain for clover. They are drilled wide so that the horseshoe may be applied. A single crop of peas is not unfrequently taken after the wheat crop, the land being fallowed the succeeding year for Swede turnips.

Vetches are sown extensively for soiling the working horses during the summer months. Those for early mowing are sown on the wheat stubble as soon as that crop has been removed, and are protected during the winter by an admixture of rye. A succession of crops is provided throughout the season; the land, as we have before stated, is sown with white turnips as soon as it is cleared of the vetches. The most economical manner of using vetches is to cut them with a proportion of dry fodder; the horses will, when thus fed, go through their work much better, and be less liable to suffer from disorders of the stomach and bowels, occasioned by feeding too freely on them in an unmixed state, when they return hungry from their work.

On most of the large farms, the cutting of chaff for horse food is performed by horse power.

In some instances steam-engines have been erected, which, in addition to the cutting of chaff, thresh out the grain, as well as grind what is necessary for the use of the farm. Earl Spencer has had one on his farm at Wiseton for several years past. Mr. Smith, of Gringley-on-the-Hill, has lately erected a small, but complete engine, which is capable of threshing out about eight quarters of wheat an hour, and is made applicable to several other useful purposes. These, and more which might be mentioned, we doubt not will be but the forerunners of others, as the necessity for economy in every department of labor shall become more urgent.

On referring to Mr. Lowe's Report upon the State of Agriculture in Nottinghamshire in 1794, we find mention made of practices adopted at that time by certain individuals, which bespeak an intelligence and enterprise much beyond their day; as for example, the application of bones at the rate of 50 bushels an acre to the turnip crop, and of rape-dust at the rate of half

a ton an acre; those individuals possessing moreover the foresight to determine on the four course system, as the best adapted to the district, when, after so many years' experience, it has become universal. These persons had also the sagacity to perceive the great superiority of the Leicester sheep over the other breeds then known in the county, and spared no expense in bringing it to perfection. It must be confessed that such statements of the farming of fifty years back are calculated somewhat to startle us, when drawing a comparison between it and the agriculture of the present day. In carefully revising Mr. Lowe's report, however, we think it clear that the instances he there adduces of such spirit and intelligence were confined to the practices of the few, and formed little or no part of those of the many.

In every age are found persons gifted with minds superior to the mass of those around them, who, anticipating improvements, the necessity of which is not admitted by their neighbors, shape their conduct by their own convictions, indifferent to the prejudices of others.

We have no wish to become detractors from what is justly due to our ancestors of the eighteenth century; but we think that very little reflection is needed to show that their movements must of necessity have been confined within a narrow circle by the disadvantages with which they were at the time surrounded, which disadvantages must have formed an almost insurmountable barrier to any thing approaching a perfect system of farming.

When a considerable portion of the county was uninclosed, when the art of drainage was all but unknown, and at a time when the prime virtue of the husbandman was the observance of a rigid economy—far too rigid, we should imagine, to allow of that liberal investment of capital which has since proved the foundation of all the essential improvements which have taken place—with all these disadvantages, and especially the want of requisite information on subjects in general connected with his profession, on which science has since thrown light and knowledge, we cannot but infer that the agriculture of 1794 must have been, as compared with that of 1844, very defective and imperfect as a whole.

SHEEP.

The pure Leicester, or a cross of that with the larger framed animal from Lincolnshire and the Yorkshire wolds, is the general stock of the county. Nottinghamshire has long been famous for its superior breed of sheep. Mr. Lowe makes mention of the names of several celebrated breeders of Leicester rams, chiefly resident in the southern part of the county, who were, at the time he wrote, going to great expense in improving the breed of sheep; giving even at that time as much as 100 guineas for a ram. It appears from his report, that Mr. Bakewell's celebrated stock had then been introduced about twenty years. The spirit infused by that eminent breeder has, we believe, been unceasingly at work ever since. It is well known that the late Duke of Bedford once hired for the season a ram of the late Mr. Buckley, of Normanton, for the sum of 800 guineas; and also, that Messrs. Thorpe, Dudding Loft, and Marris, paid to the same gentleman 1000 guineas for the hire of a ram. The success of Mr. Burgess, of Holm-pierrepont, at the last Christmas show in London, will alone prove the high place he holds in the present day, not only as compared with his neighbors, but as challenging competition with the country at large. And although these names belong more properly to the other division of the county, their owners are honored, and have their merits recognized, alike in both.

Nearly every farmer in this western district is a breeder of sheep. The

country is more adapted to the support of that animal than to any other; and it is doubtful whether so certain a profit is attainable by any other method of stocking a farm as by the farmer *raising* his own flock. For the difference between the price of poor stock, and the same animals when made fat, has of late years been so small, as not unfrequently to leave little or no profit to the person in whose hands that change has been effected. On the other hand, the fault of those who breed lies too often in breeding more than they can well keep at all seasons, and thereby materially lessening their profits. We are convinced that any infringement of the above as a rule, will assuredly in adverse seasons be attended by greater loss than is ever made amends for, by the profits of more favorable years.

We have before observed that it is the general practice to sell the wether hogs fat before midsummer, when, without any great forcing, they will frequently attain a weight of from 20 to 22 lbs. a quarter, their fleeces averaging from 7 to 9 lbs. To bring about this result when allowance is made for the number kept on the acre, no time must be lost, and it can only be accomplished by giving them fruitful pasturage on clover seeds during the summer, and by putting them early to turnips in the autumn, with an allowance of linseed-cake or corn, mixed with culm or chaff, to meet the wants of the animal during that season especially when it is fed on the turnip, a food not natural to it, and for that reason requiring the assistance of some such auxiliary.

During the several years when there was an annual prize show at Blyth, (which is now discontinued,) the animals from this district exhibited there might have borne comparison with any others that could have been brought against them. The show took place in May, at the fair which is held during that month. The competition was between the exhibitors of the best pen of 20 wether hogs, clipped. The age of the sheep would then be about 15 months. The weights to which these animals attained were in some instances 35 lbs. a quarter, and even more. Amongst the most successful of those competitors was Mr. Allison, of Bilby, who has for many years distinguished himself as a breeder of pure Leicester sheep. We mention the above only to show what may be obtained by superior blood, with unremitting care and attention.

Southdowns are kept on some of the large estates, but they do not obtain a place amongst the general stock of the county. We greatly doubt, indeed, in opposition to all that has been said to the contrary by the advocates of Southdowns, whether they can compete with the Leicesters, age and weight considered. We made an experiment some years ago between the two, placing them as far as possible on an equal footing, and the result determined itself greatly in favor of the Leicesters. When fat lambs are wanted for an early market, the Southdowns possess an advantage, by being more hardy, more prolific, and nursing their lambs better than the Leicester ewes; but where the lambs are required to be wintered, and then go to an early market, they fail in both mutton and wool; their habits are more erratic, they want the quietude which the Leicesters possess, and which contributes so much to their being made fat.

Before we quit this subject, we cannot but briefly advert to the greatly increased number of sheep now kept in this district, compared with the time when Mr. Lowe wrote. Many persons can remember, subsequently to that period, when forest farms of 300 acres of land had not more than 50 ewes upon them, and these of an inferior kind, and that much difficulty was often experienced in supporting them through the winter. These same farms in

the present day, as we can bear testimony, support from 500 to 700 sheep throughout the winter—the greater part of which are sent fat to market at weights of from 80 lbs. to 120 lbs. each.

We need scarcely observe that the breed of sheep known formerly as the one peculiar to this district, and called "The Forest Sheep," is now nearly extinct. Judging from the general appearance of the few which remain, they indicate an animal more likely to endure hardships than to repay any expenditure in attempting to improve it.

BEASTS.

As there is but very little permanent grass land in this district, the number of beasts kept is greater during the winter than the summer months. Many of the farmers sell off almost all they winter in the spring months, to the summer grazier, and buy in again to supply themselves in the following autumn. When the turnip crop is an abundant one, the number of fat cattle sent to market throughout the winter is very great. When that crop is less abundant, much fewer are made fat, the farmer's attention being directed chiefly to the converting of his straw into good manure, without drawing many turnips to be consumed in the yards. Any profit that he might realize on the feeding of cattle, he well knows would be more than counterbalanced by a diminished crop of barley, where such turnips ought to have been eaten on the ground. He accordingly contents himself with preparing beasts for the summer grazier by sending such stock to market in good condition, rather than by fattening them himself to the injury of his farm. This he does by giving to each beast a moderate allowance of linseed-cake, varying from 4 to 6 lbs., according to their size, other circumstances also being considered. The animal is thereby kept healthy, and with only a daily allowance of 4 lbs., which is the minimum of what ought to be given, will at least maintain its condition. Each beast will thus cost during the six winter months from three to four pounds, more or less, according to the price of cake at the time. When, however, the farmer has in prospect his next year's turnip crop, and looks still beyond to the barley crop which is to succeed, a proportion of his beasts will most probably be allowed 8 lbs., and such as are being made fat, from 12 to 16 lbs. each, which will impart a power and goodness to his manure, visible wherever it is applied for years afterwards.

The best farmers have long since ceased to give cake to their stock, at those times only when they find a profit on that stock to justify them in doing so. They now look upon the conversion of their straw into the best possible manure as an object of the highest importance to their farms. They calculate how they shall use the greatest amount of cake, which they regard as an indispensable in good farming, at the least possible loss; for, as prices both of beef and mutton have of late been, they must necessarily incur a loss if they expect their remuneration from the live stock, instead of from the land. The farmers take a wide view in this matter, and we think regard their interests in their true light. Mr. Pusey has observed, in his spirited description of Lincolnshire farming, that there the cattle are looked upon only as "machines whereby to make manure," and upon the same principle does the Notts farmer act when he considers his straw, which increases year by year with the improved condition of his farm, as a "vast number of tubes," whose use is to be filled with liquid manure, and carried out to the support of his future crops.

Beasts are bred to a greater or less extent on most farms, the only breed being, with few exceptions, the Durham, or as they come now to be styled,

"the Improved Short-Horns," of which the county can boast some of the best specimens in the kingdom. Earl Spencer's celebrated herd at Wiseton is too well known to require further notice here than to state, that we believe his Lordship continues to feel an undiminished interest in that department of farming. Mr. Parkinson's herd of Leyfields, near Newark, has also acquired a high character, to which it will be admitted to be fully entitled, by all who have seen it. Mr. Parkinson is owner of the celebrated bull, "Sir Thomas Fairfax," to which was awarded the first prize, as the best short-horn bull, by the Royal Agricultural Society in 1842. Mr. Watson, of Walkeringham, has in the course of a few years attained great eminence as a breeder of short-horn beasts, and is in possession of a bull, "Lord Adolphus Fairfax," of perhaps equal merit with his sire, "Sir Thomas Fairfax." These herds are well known amongst breeders, but the county has many others of less fame, though of distinguished merit, to which we only allude for the purpose of showing that their influence must have been very great on the general stock of the district. The most cursory observer has only to walk through any cattle fair in the county in the present day, to be struck with the improved appearance of the stock of all kinds, compared with what could have been seen a few years ago.

Calves are reared both by the pail, and by sucking the dam, or a foster-mother; but the point which appears to require most attention in the perfect rearing of any kind of stock, consists in promoting without any check a continued progression after weaning, without any loss of condition at that time, or indeed at any time afterwards. An instance of the effect of such a mode of treatment was given us some time ago by Mr. Brooke, in a large lot of bullocks, fed on the farm of the Hon. John Simpson, at Babworth, which averaged, when about two years and one month old, upwards of 60 stone each of 14 lbs to the stone.

FIGS.

Those who have pursued farming more as an amusement than from any profit to be derived from it, are observed generally to have evinced a greater disposition to improve the breed of pigs than of any other animal. It is especially the poor man's property, and this may account for the additional interest which has been taken in its improvement. Certainly no other animal has been subjected to so complete a metamorphosis during the last twenty years. Instead of the long-eared, coarse-offalied animal, which was common formerly, and which was as difficult to make fat as it was hard and unpalatable to eat when so made, may be now seen a compact creature, with small ears, short snout, deep in the sides and thighs, with legs short, and seemingly unequal to support the superincumbent weight which it is their office to carry.

It has been often said by various judges at the local agricultural shows in this county, that the show of pigs has been superior to any thing they have witnessed in any other part of the kingdom. And yet with such celebrity, we are quite at a loss by what term to describe the peculiarity of breed. One of the best breeds with which we are acquainted was supplied by the late Mr. Fowkes, of Barmborough Grange; it has been bred very closely, and without a single cross from any other source for more than thirty years. The breed to which we allude is that of Mr. Crofts, of Blyth, from which has emanated much of the best blood in the district. Viscount Galway has also a very superior breed of a similar caste, at his Lordship's seat at Serlby, which combines with great size the best quality, being quite equal in that respect to the Neapolitan or Chinese, yet in its general character bearing little affinity

to either ; possessing a larger frame, attaining with nothing beyond ordinary keeping at 14 or 15 months old, 25 stone and upwards. This breed of pigs has the greatest possible aptitude to fatten, and is made fat at the least possible expense ; a merit which the cottager has discovered and fully appreciates. In default of a better distinguishing title, it will be no misnomer to call it The Improved Nottinghamshire Pig.

HORSES.

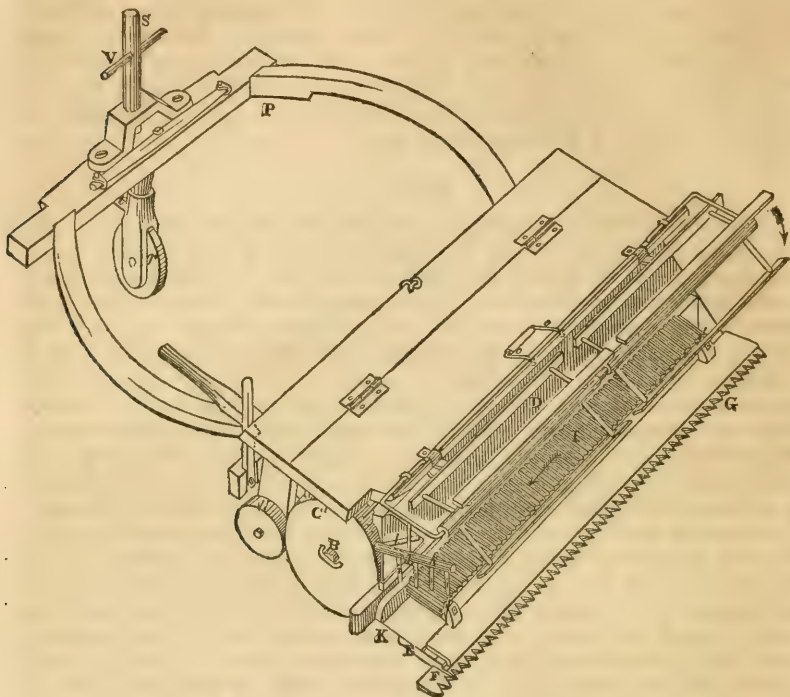
In this district the ploughing is invariably done by two horses abreast. The horses in general use are of a more active kind than formerly, being found to get over the ground much quicker than the old Lincolnshire breed, which in this part of the country is now nearly extinct. Many of the mares have of late years been crossed by a Cleveland stallion, brought into the county at a great expense by Mr. Watson, of Walkeringham, whose spirited exertions in behalf of agriculture in every branch are well known. This cross has unquestionably been an excellent one for the light soils, by imparting to the ploughing horses a mettle and speed which they before wanted. Many however of the farmers buy their horses as they require them, at two or three years old, of the graziers of the Trent side district, where the permanent grass land offers a more suitable pasturage than the sheep-walks of their own.

Premiums are given also for blood horses by the Agricultural Societies ; but they do not receive much attention from the majority of farmers. With the late increased demand for good horses, both in the home market and on the continent, the prospect of remuneration in that department has been certainly equal to any other. The farmer looks, and not unwisely we presume, at the long period of five years, which must elapse before the animal is marketable, and also at a certain risk during that length of time, with perhaps an uncertain profit at the end of it. Any speculation which requires such a length of time to decide it, does not, we confess, present a very encouraging field to enter upon ; nevertheless, if the first principle of breeding be looked to, which is that "like produces like," and we were to expect good ones only from good ones, we believe that the uncertainty would be much lessened.

The Yorkshire Wolds have been long regarded as the nursery for our best blood-horses, the breeding of which has there been considered lucrative, from its being confined to such horses only. The degree of success will depend much on the stallions introduced into the district being of first-rate character ; but as these are a class which can only be had for high prices, and which it does not suit the generality of breeders to supply, they must be introduced, if at all, by the wealthy and influential.

(To be continued.)

TO SECURE THE FRUITING OF A TREE.—The following directions may, probably, be interesting to some experimentalists and amateur gardeners. They were given to me several years ago by the late Lady G. Murray :—Select a tree well furnished with blossom buds, just as they are beginning to expand. Take a potato-fork and with it make holes all over the surface of the space occupied by the roots, heaving the earth by pressing on the handle, and with this exertion make holes about 18 inches apart. Having dissolved 1 oz. of nitre to 3 gallons of water, fill the holes with the solution. No manure must be given. Should, after stoning, the tree appear unable to sustain the fruit, the following preparation may be applied in the same manner. To 1 gal. of blood add 1 gal. of water and 1 oz. of potash. Stir the whole well together, and when it has settled, pour off the liquid, and mix 1 gal. of this liquid with 1 gal. of water, and pour it into the holes made in the manner already described.—*M. E. H.*



START'S PATENT GRAIN REAPER.

THE annexed engraving is a perspective view of a Grain Reaper, invented and patented by Mr. William H. Start, of Smyrna, Kent county, Delaware, in June, 1851. *AA* is a strong frame; it rests upon the axle *B*, of the running wheels *C*. The wheels are fixed to the axletree by a catch of each, inserted in a notch on the axle, near the end of each hub. When the machine is drawn backwards, these catches have no effect on the notches, and both wheels turn independent of the axle. The front rail of the frame projects in front of the axle, to allow the cut grain to fall between the cutting apparatus and a fence *D*, in front of the running wheels. The cutting apparatus consists of two members, the lower one, *F*, being stationary, and secured to the bar *E*, while the upper one, *G*, is made to move to and fro over the roller. Each of these members consists of a toothed blade, which, as the machine advances into the standing grain, cuts it between the teeth. The motion of the cutting blade is given by a crank, with which it is connected by a rod. The crank is secured to a shaft at the front; the said shaft extends back and has a bevel pinion on its back end, gearing into a bevel wheel (not seen) on a short shaft parallel with the axis. This short shaft gears by bevel gearing with the axle *B*; as the axle revolves, the crank is made to revolve also and give the cutters a reciprocating motion. *I* is an endless apron behind the cutters, which is made to revolve by a belt that passes over a pulley on its shaft, and a corresponding one on the crank shaft spoken of. By the motion thus imparted to it, the upper part of the apron is forced to move in the direction of the arrow, by which means the cut grain is conveyed to the side *K*, of the machine, and is heaped against a gate. The latter consists of a series of teeth, *i i*, secured to a head *K*; this gate is secured to a piece fastened to the front bar of the shafts *P*, and to the end of the fence *D*. In the end of the axle outside the wheel there are one or two pins, which, as the axle revolves, strike the hind end of the gate handle. This makes the bunches of cut

grain drop to the side clear of the machinery. In order to lay the cut grain evenly upon the endless apron, and to facilitate the action of the cutter, a reel revolves above the cutting apparatus. This reel can be raised or lowered, to suit the kind of grain to be cut. The machine is advanced forward by a team behind, hitched to the whiffletree within the shafts, *r*. The parallel whiffletree bar behind has a vertical standard, *s*, having a wheel, *v*, on its lower part; it has a steering tiller, *t*, (seen partly below,) by means of which the wheel is turned to change the direction of the machine. The upper part of the standard, *s*, has a cross bar, *v*, on it, by means of which, when the driver sits on the back bar, he can guide the wheel, *v*, as required. The wheels are made high, so as to give a decided advantage for ease; the grain is discharged in bunches, so that they can be bound with facility. Grass can be left in winrows by raising the gate.

FLAX COTTON AND M. CLAUSSEN'S INVENTION—PROSPECTIVE ADVANTAGES TO AMERICAN FARMERS.

It was, if our memory serves us, in the autumn of the year 1836, that a Captain Baylis, an agent of the East India Company, visited the neighborhood in which we then resided in Mississippi, with the view of engaging the services of a dozen or more of such of our best practical planters as could be induced, by the offer of liberal monthly wages and the contingency of a munificent reward in case of ultimate success, to accompany him to the East Indies and establish there large cotton plantations on the Mississippi plan. Under the direction of the persons so engaged, the Captain laid in large supplies of cotton-seed, gin-stands and agricultural implements. This was the commencement of an expensive but well-directed effort on the part of England to emancipate herself from a dependence on this country for her greatest manufacturing staple. Query: Had she succeeded, how long would cotton have been admitted into her ports duty free? But fortunately for us, the experiment, though made in every part of the East Indies holding forth the least prospect of success, failed—failed so signally that it will never be renewed. Still struggling to free herself, England now grasps at this discovery of the Chevalier Claussen, and fancies the elements of emancipation now within her reach; but in our opinion she is again doomed to disappointment; the multitude will never be clothed in linen fine or coarse, nor in a sanitary point of view is it desirable. The monopoly of cotton will ever remain in our hands, as Providence designed it should, a curb stronger than steel upon British Rapacity. The possibility of working up flax on cotton machinery is now *the* question with the agricultural and manufacturing world, and we will endeavor to keep our readers posted on the subject. The following letter from Mr. Bateman takes a more comprehensive view of the subject than any we have yet seen. We had almost forgotten, in connection with this subject, to return our thanks to Mr. Allan Cameron, of New-York, for some really very fair samples of flax cloth, spun and woven on cotton machinery; together with a work published by Mr. Wiley on the cultivation of flax, the pith of which we will publish on some future occasion.

LONDON, June 18, 1851.

FRIEND HARRIS:—Among the first subjects I had noted down as demanding particular investigation during my visit here, is the one named at the head of this letter; and hence as soon as I had completed a general view of the Crystal Palace and its contents, I sought after the Chevalier Claussen and his very interesting display of articles illustrating his invention. I found him surrounded with specimens of flax and flax cotton, in all stages of its preparation and manufacture, and himself very free to communicate the fullest information I could desire on the subject; and as I am inclined to believe this information

will be found of much practical value to the farmers of Ohio, and our Western country generally, I will devote this letter to *flax cotton*, instead of the World's Fair in general.

In the *Ohio Cultivator* of May 15th may be found a partial description of M. Claussen's invention, for which he has obtained letters patent in most countries of Europe, and in the United States. He has recently disposed of the right for the United States, to a couple of gentlemen of this city, one of them an American, who inform me that they are now effecting arrangements for the speedy introduction of its use in our country, and they are determined to prevent any monopoly of its advantages by speculators, by granting rights on moderate terms to persons or companies in numerous different places. Particulars, as soon as determined, will be announced in the *Cultivator* and other papers.

In the mean time I would suggest to such farmers as are now growing flax for the seed, that it may be well for them to save the straw in a dry and secure place, after the seed is threshed out, as it will in all probability be worth from \$5 to \$8 per ton, or more, as soon as the simple machinery can be introduced which is required for reducing the fibre from the dry straw to a suitable condition for market, which we are assured shall be introduced during the coming autumn or winter.

This machinery is only a series of iron rollers, propelled by horse or other power like a threshing machine, which crush and break up the woody portion of the straw, so that by shaking or scutching, it can be mostly separated from the fibre; although by this dry process the fibre is left in a coarse and half cleaned state. It is now ready to undergo the chemical process and manipulations described in M. Claussen's pamphlet, and is also in a fit state for putting in bales like cotton or hemp, for market, and is worth from \$50 to \$60, or more, per ton, as prices now range, to persons who may engage in the business of completing the process and shipping the cotton to the manufacturers.

The value of this material to the manufacturer will of course vary slightly according to the price of cotton, and may be supposed to bring about the same price, in its finished state, as fair qualities of cotton, say from 10 to 12½ cents per pound in New-York, or from 12½ to 14 cents in England.

In estimating the cost of producing flax cotton in England, M. Claussen puts the value of the flax straw at \$20 per ton; or of the rough fibre as cleaned by the grower at about \$60 per ton; then the cost of materials and labor for completing the process, at about \$25 per ton of rough, or \$50 per ton of finished fibre; making the total cost to the manufacturer about \$175 per ton—which he is sure is a liberal estimate; and this is only about one half the ruling price of cotton for the past year.

In regard to the value of the flax cotton for manufacturing purposes, all the experiments that have as yet been tried seemed decidedly in its favor, whether used alone or mixed with cotton or with wool. I have examined fabrics of each class, and can testify that their appearance is good and their strength quite remarkable. I will inclose in this letter a small sample of the flax cotton, and also of unbleached muslin made from flax and other cotton mixed in equal proportions, for the inspection of any readers of the *Cultivator* who may be curious to see them.

To show that experienced manufacturers have full confidence in the success of this new article, it may be stated that several large establishments are prepared to engage in the business as soon as the new crop can afford a supply of the material. Among these are the mills of Messrs. Quitzow, Schlessinger

& Co., near Bradford, and Mr. Dagan, near Cork, in Ireland; also of Messrs. Bright Brothers & Co., Rochdale, England.

Samples of the cloth woven at the mill of Messrs. Bright Brothers, of Rochdale, were exhibited at the meeting of the Royal Agricultural Society, on the 26th of February, as well as of the following articles, as noticed in the official report of the proceedings:—

Sample of flax straw, prepared according to the new process, adapted for linen manufactures.

Sample of long fibre scutched from the above.

Samples of pure flax fibre, or "British cotton," adapted for spinning on cotton machinery.

Samples of yarn spun on cotton machinery, some from all above flax fibre, others mixed in various proportions with American cotton, those mixtures being termed by the inventor flax cotton.

Samples of flax fibre prepared for mixing with wool.

Samples of yarn produced on ordinary woollen machinery, composed of wool and flax in various proportions, termed by the inventor flax wool.

Samples of flannel woven from the above.

Samples of fine cloth woven from yarn composed of flax and wool in various proportions, and dyed.

Flax fibre prepared for mixing with silk, and dyed of various colors.

Flax fibre mixed with spun silk, and termed by the inventor flax silk.

A sample of yarn produced from the above.

Samples of flax-cotton yarn dyed of various colors.

Samples of cloth woven from flax-cotton yarn and wool, dyed.

After a full and careful investigation of the whole subject, the Royal Agricultural Society give the following conclusions in their official report, in regard to the advantages of this method of preparing flax:

That by the new process flax is rendered capable of being spun, either in whole or in part, on any existing spinning machinery.

That the fibre to be mixed with cotton or spun alone on cotton machinery, is so completely assimilated in its character to that of cotton, that it is capable of receiving the same rich opaque color that characterizes all dyed cotton; and, consequently, any cloth made from flax-cotton yarn can be readily printed, dyed, or bleached, by the ordinary cotton processes.

That the flax fibre can always be produced with profit to the British grower at a less price than cotton can be imported into this country with profit to the foreign producer.

That, as a consequence of this advantage, the manufacturers of this country will be less dependent on the fluctuations of the cotton crop for a supply of the raw material, and a more regular employment will be given to the manufacturing population, and the present amount of local rates be greatly diminished thereby.

That the British grower will of necessity derive great benefit from the supply of the wide demand thus opened to him.

That with respect to the advantages of being able to spin flax in combination with wool on the existing woollen machinery, the first is, that the flax prepared by M. Claussen is capable of being "scribed," "spun," "woven," and "milled," in all respects as if it were entirely wool; having an advantage in this respect over cotton, which has not the slightest milling properties; on the contrary, the flax fibre is capable of being even made into common felt hats with or without an admixture of wool. To such an extent has the milling property of flax been proved, that the sample of cloth exhibited had been woven to 54 inches wide, and milled up to 28 inches wide.

That the flax fibre will not, under any circumstances, when prepared for spinning with wool, cost more than from 6d. to 8d. per lb., while the wool with which it may be mixed will cost from 2s. to 4s. per lb.; consequently reducing the price of cloth produced from this mixture 25 or 30 per cent. below the present prices of cloth made wholly from wool, and being of equal, if not greater durability.

That short wool refuse, which cannot by itself be spun into a thread, may, by being mixed with this thread, be readily spun and manufactured into serviceable cloths.

That by this process flax may be also so prepared as to be spun in any certain proportions with silk upon the existing silk machinery; that when so spun, it is capable of receiving considerable brilliancy of tint. That the fibre may be prepared for thus spinning

at a uniform price of from 6*d.* to 8*d.* per lb. That as it may be spun in any proportion with silk, it is evident that the price of the yarns must be reduced according to the relative proportions of the materials employed, thus extending the markets, and giving increased employment to the operatives.

That, by M. Claussen's plan of bleaching, any useless flax can be converted into a first-rate article for the paper maker, at a less price than the paper maker is now paying for white rags; and suitable for the manufacture of first class papers.

[We hope this last suggestion will be borne in mind by our paper makers at Delaware and elsewhere, and be the means of effecting some improvement in the durability and strength of our printing paper.]

The unlimited demand for the material is another strong reason in favor of this new discovery. The quantity of cotton required for the English manufacturers alone is stated at 777,000,000 lbs. per annum—or *a thousand tons per day!* Of flax, the amount now used annually in Great Britain is about 100,000 tons, not more than one fourth of which is of home produce. For the past two years it is stated that the supply of cotton produced in the world has not near equalled the demand, and it is believed that the growth of this article in the United States has reached its maximum; hence the manufacturers of England are casting about to discover some new material, or new source of supply, and even if the flax cotton should form but a small relative proportion of that supply, it is easy to see that the demand would at once become so great that no farmers need ever to apprehend a glutting of the market. Nor will it be possible for a supply of flax to be produced by the farmers of Great Britain or the adjoining countries of Europe, without serious detriment to their agricultural interests. It is obvious, therefore, to our mind at least, that this discovery will soon lead to very important results to the farmers of the United States.

THE TENDENCY OF THE TARIFF OF 1846.

WE take the following from a speech recently delivered at Reading, Pa., in defense of our present commercial policy; and we do so because we feel satisfied that it depicts clearly the result towards which we are now most rapidly tending, and because we desire to ask our agricultural friends to reflect how it is that they are to be benefited by converting all the present makers of iron and cloth, and all the present miners of coal and ore, into producers of food, instead of remaining as they are, consumers of food—rivals instead of customers? The annual growth of population is now more than 800,000, and a large portion of these would, if permitted, employ themselves in building furnaces and mills, and opening mines, and in making cloth and iron, while consuming food; but if driven to it, they must become producers of food. We pray our farmers to look at the present price of wheat, and to reflect what is likely to be the price when the events here predicted shall have occurred, as they must occur if our present policy be continued. The speaker said, that

“The keen and far-seeing statesman of the South understood and comprehended the science and true policy of this Government much better than the Northern speculators and capitalists, and consequently fought the question of protection most manfully for upwards of twenty years; that the *heart* of the Democratic party in the free States always had and always would beat in unison with the Democratic free trade of the South, of which the lamented Calhoun was the head and front; that the greatest difficulty in the Democratic party of the free States consisted in the fact, that a portion of the party (the laboring men) inclined strongly towards the protective system, which had

heretofore prevented the party from incorporating the system of free trade as a cardinal principle of their faith, and which was neither more nor less than the total abolition of the custom houses and the revenue officers, and a resort to direct taxation for Government expenses, and to that it would and must sooner or later come; *and if by it all the iron works, coal mines, and factories would be closed up and abandoned, and the laborers thrown out of that kind of employment, still the country would be benefited by it, and it would enable the foreign manufacturers, with their cheap labor and superior skill, to furnish the consumers with the article at low prices, and thereby prevent the acquisition of wealth and the consequent growth of home aristocracy*—in other words, it would equalize the people in point of property to a greater degree than under the operation of the protective policy; in fact, it would make and keep the people more *democratic*."

It would certainly equalize them, not only among themselves, but with the world, for the farmers and artisans of this country would become as poor as those of Europe.

For the Plough, the Loom, and the Anvil.

THE PICKMAN FARM, SALEM, MASSACHUSETTS.

MESSRS. EDITORS:—I know not how I can, at the present moment, better respond to your request, to furnish facts of a practical character, useful to the farmer, than by stating some of the impressions derived from a recent visit to Mr. Horace Ware, jr., the tenant of the Pickman farm, in Salem.

This farm—situate on the south-westerly borders of the city, adjoining Marblehead and Lynn—contains upwards of four hundred acres. It borders on Forest river, from the marshes of which much of the best mowing land on the farm has been reclaimed. About half of the whole is rough pasture, of which no use has been made, except to feed the numerous stock of cows kept on the farm—generally from thirty to fifty: at the present time Mr. Ware said he had thirty-four. In answer to an inquiry as to their produce, I was surprised to hear him say, *one gallon* per day for each cow through the year. I should have guessed that good cows, running in good pastures like these, under good management like Mr. Ware's, would have yielded much more than this; but I remember to have learned, twenty years since, on a visit to the farm of Mr. J. Nichols, of Salem, then one of the best managed milk farms in the vicinity, that the average produce of the cows was five quarts, or one and a quarter gallons, per day for each cow, through the year. I have seen it stated recently, that on a celebrated milk farm in the vicinity of Boston, the average produce to each cow per day was eight quarts, or two gallons. I think this must have been for the season of milking, and not through the year. I cannot understand why the amount should be so much greater at Boston than at Salem, unless their famous water-works help the quantity.

This leads me to speak of the supply of water on the Pickman farm. It is obtained by means of an *hydraulic ram*, from a small pond, situate in the pastures, at a distance of half a mile or more from the buildings. This pond is about twenty feet above tide-water. A fall of fifteen feet is used for the purpose of forcing the water. The click of this machinery has been constant for the last two years, requiring no superintending care whatever. The water is conveyed through pipes, across the channel of Forest river, and distributed at such points on the farm and about the buildings as most needed. I noticed in the cow-yard a long trough, filled with clear water, at one end of which

bubbles were constantly rising on the surface. I learned this was where the supply came in, through the aperture of a *pipe-stem* of smallest dimensions; and in this way there was a sufficiency for the supply of the entire stock of cattle. I could not but admire the simplicity, the neatness, and the convenience of this arrangement. When I called to mind how many hours I had labored when a boy, to pump water for a stock of a dozen cows, and convey it, by means of temporarily-placed conductors, to the cow-yard, I could not but think that the daily saving in this item of labor would go far towards balancing all the outlay of expenditure. Then the purity of the water, and the constancy of the supply, are considerations of great importance. To the mingling of the water with the milk after it is taken from the cow, as is *sometimes* done, there are decided objections, which do not apply to a full supply before it is taken. On the contrary, I have ever considered a full supply of pure water to milch cows, just when they want it, one of the most important things to be regarded in taking care of cows. I have always found the best products of the dairy to be obtained from cows that feed in pastures fully supplied with pure water. Spring or running brook is preferable to pond water. That which is best for man to drink is best for cows also, provided it is not too cold. And it may be doubted whether the health of men is benefited by the reduction of temperature or the *addition of stimulants*. Nature understands very well what she is about in her order of arrangements. I learned from Mr. Ware, that the entire expense of material and preparations, for thus bringing the water 2,500 feet, was \$225. It is now conveyed through leaden pipes. I should prefer block tin, which can be had at about the same cost; as I have no fancy for lead on the stomach, either *cold* or *hot*, or in any other manner; and am by no means satisfied that it is any better adapted to the stomachs of the cows. At all events, if the water is once impregnated with lead, I am not quite sure it will be entirely purified by passing through the cow's *laboratory* in being converted into milk. This is a consideration I leave to be determined by scientific gentlemen; I make no pretension beyond practical observation. This supply of water for all the purposes of the farm, struck me as one of the most simple, economical, and useful applications of scientific principles to ordinary purposes, that I have ever witnessed. It does on a small scale, what the power of the Schuylkill does on a large scale for the comfort and convenience of the city of Philadelphia.

From the same pond Mr. Ware obtains annually two hundred tons of ice, which he uses for the purposes of the farm; to wit, the keeping of the milk and products of the dairy in best condition. To my astonishment Mr. W. said he could cut and house the ice on the margin of the pond, at an expense not exceeding *six cents per ton*; and it could be taken home as they had occasion to use it. Here, then, from a little pond of one quarter of an acre, in an obscure pasture, surrounded by hills and hedges as rough as can be imagined, is drawn an inexhaustible supply of *pure water* and *cooling ice*, for a dozen men and sixty cattle through the year, at a cost not exceeding *thirty dollars*. This is a luxury that any common farmer, even on a small farm, could command, who has a spring or pond near his premises; for from a spring a pond could be filled. Did our farmers know the comforts at their command, so many of them would not drudge on from year to year in the paths their fathers trod before them, without any effort at improvement; but they would arouse from their lethargy and embrace their privileges.

This Pickman farm has been distinguished for the products of the orchards upon it; but Mr. Ware stated that these products have fallen off very much for the last half dozen years. There has been no want of care in "digging

round and dunging" the trees, and their growth and appearance are luxuriant but still the fruit is not forthcoming, or comparatively speaking, nothing to what it used to be. Here is another field for the speculation of gentlemen of science. The understanding has been, that when trees are well taken care of, the laborer will be rewarded for his toil; but the rule is not universal, no man being more thorough and persevering in what he undertakes to do than Mr. Ware. Possibly that element in the soil which feeds the growth of fruit has been exhausted by an over product, and something should be applied to replenish it. What that *something* is, is the question. Heretofore more than one thousand barrels of the first quality of apples have been gathered in a single year, on this farm; now it would be difficult to find *one hundred* barrels, although this is the bearing year for the Pickman apple, which has long been celebrated. In my glance at the premises, I have felt it to be a duty to speak of things as they are, whether for or against, as presented to observation.

Mr. Ware is now engaged in reclaiming about sixteen acres of wet meadow land, for which he is to have when complete fifty dollars an acre for his labor. He thinks the land will then be worth two hundred dollars an acre. It is situate alongside of the Eastern Railroad, for the space of a quarter of a mile, by which manure can be taken from the city of Boston, at an expense of three dollars per cord. Mr. Ware has had much experience in reclaiming wet meadow lands on his own and his father's farm in Marblehead, an account of which it was my intention to give when I took my pen in hand, but I find my paper filled.

One thing should not be omitted in relation to the Pickman farm. It has been under the *care of tenants* for *fifty years* or more, and has constantly grown better. This is so different from the ordinary operations of tenancies, that it should be marked to the credit of the owner and the occupant. None but judicious owners and faithful laborers could bring about such a state of things.

It was my privilege to make the acquaintance of the late Col. SKINNER, the senior Editor of the *Plough, Loom, and Anvil*, on his last visit to New-England, in September, 1850. By his politeness, I have since been favored with the perusal of his journal, by which I have been much instructed. I was deeply grieved by his sudden departure from life, at a time when the public were expecting many years more of useful labor. Science lost in him an ardent friend; agriculture lost a devoted admirer. Few men have done more to advance the best interests of the *industrial classes* of our country than he. At all times, early and late, he was content to labor for their good, regardless of self. While others were striving to benefit themselves, he was best pleased when he most benefited his country. I shall never forget the point and power of his remarks, at a meeting of the farmers of Essex, when I had the honor to introduce him at their annual Festival. Little did I think, then, that I should see his face or hear his voice no more for ever. But although he so soon departed, his words and works remain a monument to his industry, more valuable than gold, more durable than marble.

With great regard, I am your obedient servant,

J. W. PROCTOR.

Danvers, Mass., September 8, 1851.

A THRIVING ANIMAL.—Mr. A. A. Knowles, of North New-Portland, says that a calf belonging to him, which weighed one hundred and twenty-six pounds at the age of four days, weighed in four weeks from that time two hundred and thirty pounds, being a gain of one hundred and four pounds in just four weeks.

EFFECT OF BRINGING THE CONSUMER TO THE SIDE OF THE PRODUCER.

WE republish the following account of a Vermont farm, because desirous to show to some of our Southern and Western friends how it is that Northern men grow rich, and why it is that so many of themselves remain poor. The great secret is to be found in the fact that the Northern man can almost always, when he will, return to the land as much as he takes out of it, while both the planters of the South and the farmers of the West are perpetually engaged in extracting from their lands all the soil capable of affording nourishment to vegetation, and sending it abroad to be wasted in distant markets, and expending half the labor of themselves and their horses in the work of carrying it there. The Northern man makes a market on the land for potatoes and turnips, milk and fresh meat; and he can afford to cultivate those things of which the earth yields by tons, because transportation is not needed, and the more he takes out of the land, the more he can return to it. The Southern man, on the contrary, raises a commodity of which the earth yields by pounds; and he exhausts his land, because of the little he takes out he returns nothing whatever back to it. Always taking out of the meal-bag, and never putting any thing back, it is not a matter of surprise that he finds the bottom, and has then to run away himself:—

Mr. Bradley's farm is situated on the southern bank of Onion river, about two miles from its confluence with Lake Champlain, and about the same distance from Burlington Village. It contains four hundred acres, more than half of which is rich *intervale* land, whose crop of grass never fails, and the remainder is upland, once covered with majestic pines, stately maples, birch, and other hardwood growth. The river forms a gentle curve, and makes more than half the fence necessary to inclose the farm. The prospect from the farmhouse over the rich *intervale* is truly romantic and picturesque, and makes one love the country. Soon as you rise from the *intervale*, you stand on a rich, highly-cultivated soil, with a twenty-acre field of wheat before you, whose heads reach above the top of the fence, and thick as they can stand. This is spring wheat, and the finest growth I have ever seen. No fields in the fertile West beat it. Standing erect, tall, even, heavily headed and thick, it makes one feel the comfort and glory of farming. On these twenty acres there will be harvested, at the least calculation, five hundred bushels of good, plump wheat, a crop that will fill many hungry stomachs, and give the cultivator a very handsome profit for his toil and labor.

Near by stands one field of corn containing fourteen acres. This is rank and luxuriant, promising a heavy yield. A portion of this field was manured by muck taken from low ground close at hand, and without previous preparation put upon the land. The corn on this part thus manured is even stouter than that enriched by barnyard dressing. The soil is light, loamy, and well calculated for the growth of such a crop, especially in seasons so wet and cold as this has been. Close beside the county road which runs through this farm I saw twenty-six young, handsome, sleek cows, in a field of clover up to their eyes. I verily thought the animals had broken into a hay-field, so tall, fresh, and green was the clover, and suggested to the owner the propriety of driving them out, but he assured me with a smile that the creatures were rightfully there. It was new ground, and the grass very rank and stout. I did not suppose any good, economical farmer would turn his cows into a clover field like that, but he told me they "hayed it" on the *intervale* until they got fairly sick of it, and let the cows and other animals eat the grass on the uplands. Considering the number of acres, this is unquestionably one of the best farms

in this or any other State of our Union. The potato crop, as well as the others, promises an abundant harvest. The interval, with the river winding round it upon the eastern and northern side, and its few stable elms left for shade, is a perfect picture, such as the painter would love to sketch.

There will be a heavy crop of wheat in Vermont, considering the amount sown. Neither rust nor the weevil has troubled it this season; and we may fairly conclude that next season much more will be sown. The people on the west side of the Green Mountains can raise their own flour as well as other crops, and now that the destructive insects have ceased their operations, it is reasonable to expect that growing wheat will be more generally attended to than it has been in years past. Winter wheat will now be sown, and abundant crops may be expected. All crops in this region will be good this season, with the exception, perhaps, of corn, and that looks fine in many places. Who would not be a farmer? Old Vermont can feed her own sons with flour, as well as clothe others with the wool of her sheep.

WHO PAYS THE DUTY?

FIVE years since, the Secretary of the Treasury, Mr. Walker, made a report to the Senate, in which he showed clearly that the price of coal to the consumer was greater by the whole amount of the duty, \$1 60 per ton, than it would be if there were no duty, although the actual selling price of coal at Pittsburg, Pottsville, Wilkesbarre, Mauch Chunk, and the other places of production, did not average even a dollar and a half. In this way he demonstrated that a tax was imposed upon the people of the Union to the extent of six or eight millions of dollars, and that thus the consumption of this most important commodity was greatly lessened. With a view to increase consumption of domestic and foreign coal, and encourage navigation, the duty was reduced to about fifty cents per ton, and by the same law *the consumers of coal*—the manufacturers of cotton and woollen goods, and the producers of iron—*were deprived of protection*, the consequence of which is seen in the closing of mills and furnaces throughout the Union. How far this has served to aid foreign commerce, may be seen by the following, to which we invite the careful attention of our readers:—

OUR TRADE WITH NOVA SCOTIA.—The *Pictou Chronicle* says: “We have received from the American Consul at this port, the following statement of arrivals of American vessels for the six months ending 30th July, in the years 1849, 1850, and 1851, by which it will be perceived that there is a great falling off in the trade carried on in American vessels:—

	1849.	1850.	1851.
	No. of Vessels.	No. of Vessels.	No. of Vessels.
May,	14	4	1
June,	21	19	4
July,	54	25	9
	—	—	—
Total,	89	48	14

“The quantity of coal shipped to the United States is much less this year, up to July 5th, than for many years previous. We give the following comparative statement with last year:—

1850, American vessels,	3,186 chaldrons.
1851, do. do.	672 do.
1850, British vessels,	12,585 do.
1851, do. do.	6,654 do.

“This great disparity in the demand for our great staple is to be attributed

to many causes, but more particularly to the opening of valuable coal mines in the United States, and the heavy duty imposed on the coal from Nova Scotia."

Re-establish the tariff of 1842, and the trade with Nova Scotia will at once increase, because the power to consume coal will at once be doubled. In the fiscal year 1842-3, we imported but 55,000 tons, whereas in that of 1845-6 we imported 156,000, upon which the producer paid a duty of \$1 60 per ton; whereas from present appearances we will this year import less than fifty thousand tons, at a duty of about fifty cents, and yet "the heavy duty" is, we are here informed, the cause of the diminution.

AMERICAN POMOLOGICAL CONGRESS.

BELOW we publish the proceedings of the Congress held in Cincinnati, October 2d, 3d and 4th, 1850—as a guide only to such of our readers as may be located between the Ohio and the Lakes. We are every day finding out that a few degrees of latitude or longitude make a great difference in the quality of the same variety of fruit; thus some of the favorite varieties of New-England apples and pears are reported as inferior by this Congress:—

Dr. W. D. Brinckle, of Philadelphia, was chosen President; F. R. Elliott, Ohio, P. Barry, N. Y., and I. A. Warder, Ohio, were chosen Secretaries. A motion was made and carried, that a committee be appointed to report upon the expediency of establishing American Pomological and Botanical Gardens. After deliberation, the committee reported as follows:

"That it is expedient to enter upon the enterprise suggested in the resolutions, and to carry it out. The spirit of the age favors the project, and this project needs only a Northern, a Southern, an Eastern and a Western establishment of the kind, to become one of the most important and most useful bodies of promoters of the pleasure and profit of mankind. The committee beg leave to be allowed time till the next meeting of the Congress to report further."

Dr. J. A. Kennicott, of Illinois, desired to introduce the subject of the culture of the grape and the apple, as connected, in the manufacture of wine and cider, with the cause of temperance. The remarks were to the effect that he considered the cause of temperance advanced by the introduction of native wines at a cheap rate—that they may take the place of distilled liquors.

List of Pears Rejected.

Spanish Bon Crieton, True Gold of Summer, Hessel Summer Rose, Petit Muscat, Roussellet of Rheims, Princess of Orange, Ah! Mon Dieu, Bleecker's Meadow, Huguenot, Michaux, Beurre Knox, Franc Real d'Hiver, Clinton.

The "Belle of Brussels" was proposed to be placed on the rejected list, but several gentlemen seeming inclined to give it further trial, it was not entered then.

List of Pears that promise well.

Paradise d'Automne, Stevens Genesee, Onondaga or Swan's Oranges, Doyenne Gabault, Nouveau Poiteau.

List of Apples rejected.

Egg Top, Cheeseboro' Russet.

List of Apples that promise well.

Northern Spy, Melon, Mother, Hawley.

The Stevens Genesee Pear was regarded by many of the Congress as wor-

thy general cultivation, but there being one or two objections made, it was put on the list as promising well.

Mr. Saul then introduced the Belmont or Gate Apple for remarks. Mr. Wood spoke in favor of it; so, also, Mr. McIntosh.

Mr. Saul spoke of the following apples as promising well, and worthy of culture, viz.: Eustis or Ben Apple, Monmouth Pippin, Peach Pond Sweet, and Sturmer Pippin.

A resolution was passed, "That when this Congress adjourn, we do so to meet in the city of Philadelphia, on such a day in the month of September, 1852, as shall be hereafter designated by the President of this Congress."

For the Plough, the Loom, and the Anvil.

SCRAPINGS OF THE BARN-YARD FOR WHEAT, &c.

COULD negligent farmers appreciate the intrinsic value of the dust of barn-yards and lanes—could they know the effect that it produces, and know that a single load, judiciously applied, is worth dollars, they could not but exercise some of their muscular strength towards accumulating and applying it. The plain truth is, many farmers do not put that value to the scrapings of farm-yards which they are entitled to, and hence the loss of so much valuable fertilizing matter. In fact, there is a certain class of agriculturists who have no more reason about them than to get angry even if you talk to them about scraping and digging out the nooks and corners of their yards with a hoe. Such farmers most invariably adopt the skimming system—that is, take the mulch and leave the most valuable manure their yards afford. Examine their yards, after they have "finished," and you find the very strata that are most essential to promote the productiveness of soil. The accumulation of these strata of manure is attributable, doubtless, to a sluggish propensity relative to the real worth of the substance. Most certainly, if two hands, with wagon and horses, can collect and scatter five loads of the dust in a day, it cannot be considered otherwise than a profitable business; for, from observation and trial, I verily believe that each load would produce three bushels of wheat—that is, when strewed on ground of a sandy and light nature. Then, allowing that such is the fact, no one can urge a reason for not getting out every pound of manure to be found within the precincts of yards and lanes.

To speak practically in reference to the application of the scrapings—the best way, perhaps, is to arrange the bottom boards of your wagon in such a way that shovelling will "go off" easily, and then strew the manure—the dust—as far each side of the vehicle as possible without causing an extra amount of labor. It should be spread evenly and nicely over the surface of the ground, as a matter of course, so that the wheat will not come up in "bunches," as it does many times, when the dust is thrown on inadvertently. I have frequently seen it used heedlessly, and the consequence was that the wheat looked spotted and disagreeable.

Relative to the effect of the scrapings of barn-yards on sandy loam, oak and chestnut soils, &c., it must be allowed at once that it is astonishing. Even if the manure is put on low, damp land, it will generally produce an effect almost incredible in its nature. It must be known by all who have tried even the coarse kinds of manure, that they prevent heaving, and when this is once prevented, there is no obstacle in the way to hinder success—that

is, as a general thing. We have tried this kind of manure so often, and with so much success, that we do not allow a load to remain in the yards undrawn. Though digging with the hoe is back-aching work, yet, notwithstanding, the process pays well, but does not always suit the "hired hands," for the most of them are not in the habit of scraping till nothing but hard-pan remains to be seen in the yard.

W. TAPPEN.

Baldwinsville, N. Y., Sept., 1851.

THE MANUFACTURE OF PINS AND OF HOOKS AND EYES.

A correspondent of the New-York *Evening Post*, speaking of the manufactories of Waterbury, Connecticut, and the enterprise and prosperity of that town, thus describes two of its establishments:—

"And first of the American Pin Company. This is the largest pin manufactory in the United States, and I believe in the world. It has but one competitor in this country, and that is at Birmingham, in this State. The patent to which this company owes its success is a profound secret, not known even to its stockholders. It is never shown, therefore, to strangers. It consists in an improvement for the making the pin and head solid, and all from one piece of wire. Till within a few years the head of most of the pins in use was separate, and twisted on to the pin by machinery. A few solid pins were manufactured in England, but they cost from thirty to fifty per cent. more than those of the older fashion. The discovery of the American patent has driven the twist heads entirely out of use. The privilege of using it was sold in England for \$30,000, where the same kind of pin is now manufactured.

"Of the portion of the works which I was permitted to see, I was most struck by the process of sticking the pins upon papers. My intellect had striven in vain to conjecture any process by which machinery could bring order out of the unspeakable confusion of several millions of pins thrown into a box together. I was here shown a row of very simple machines, each tended by a young girl, which arranged on papers more pins in a day than any one person could have possibly done by hand in a fortnight. A practised person, I was told, would pick 1,200 papers a day, each paper containing 280 pins, making in all 336,000 a day. In a day of ten hours this company throw off on an average 4,000,000 pins per day, or about twelve hundred millions a year. When I learned this extraordinary fecundity of a single pin mill, I felt that it was of but little consequence what became of all the pins; for it is pretty certain that the supply is not likely to give out very soon, in spite of any conceivable extravagance of pin money. The capital of this company is only \$100,000, but its profits are reputed to be very great.

"Upon the same premises we were shown the works of the Waterbury Hook and Eye Company, where a capital of \$16,000 is employed in the manufacture of hooks and eyes. Here were arranged long rows of little machines about the size of small washstands, under which a constant shower of these little feminine conveniences was pouring down, but from what cause or by what agency it was difficult to conjecture. Upon a closer inspection, a large spool of wire was perceived revolving slowly in its rear, growing shorter inch by inch in mechanical harmony with the machinery, while iron fingers, curiously articulated, were ready to grasp the severed fragment and pass it along from change to change, until it finally dropped into the receptacle beneath, a perfect hook or eye, ready for use. For a moment it seemed as if

each machine was instinct with life and intelligence. The power of speech appeared to be all that was lacking to complete the delusion. There were but four or five men in the apartment, who passed around occasionally from one stand to the other, to oil the machinery, to supply new wire when the previous spool was consumed, or to empty the vessels when filled by the silvery shower. The whole performance more resembled a voluntary process of nature than the result of a mechanical art. The duty of the superintendent of one of these machines seemed to me curiously alike to that of the gardener who plants his peach-stones, which, after many days, sprout, grow into a tree, blossom, and finally bear peaches, which, when ripe, drop from their branches and are gathered for use."

AMERICAN PRODUCE IN LIVERPOOL.

THE following extract from a letter of Mr. Bateman, in the *Ohio Cultivator*, besides abounding in valuable hints to the American producer, will enable him to estimate his chances of successful competition with the grain-growers of the continent of Europe:—

The state of the American produce market was one of the first objects of my inquiry. I was present at the great corn and flour exchange recently, where an immense amount of business was transacted in two or three hours. The sales are all made by means of small samples, displayed on counters or tables. I was much surprised to find a large portion of the flour and wheat, and even considerable Indian corn, was from parts of France, Holland, Russia, Egypt, &c., and but little, comparatively, (except corn,) from the United States. The quality of the wheat and flour, from France especially, was superior to much of that from our own country; and the low price at which it can be exported and sold, speaks well for the productiveness of that country.

During the month of April, 1851, the quantity of wheat imported into Liverpool from the continent and the Mediterranean, was 217,416 bushels; of flour, 27,328 sacks, (of 280 lbs.) and of Indian corn, 61,414 bushels. From the United States, during the same month, there was imported 35,250 bushels of wheat, 15,911 barrels flour, and 38,060 bushels corn. The month of May, we were told, would show still more unfavorably for the American trade, and some of the flour recently arrived was sold at a loss of about \$1 per barrel, (Ohio.) The price of good Ohio flour in Liverpool for some time past has been only about \$5 per barrel.

The trade in bacon, pork, lard, cheese, &c., is not very active, though steady and remunerative. Through the politeness of one of the most extensive dealers in these articles, (Mr. James McHenry,) we were shown through his spacious lofts and warerooms, and were surprised at their extent and completeness, and could not but admire the perfect system and order which marks every department. We found that great pains and care are required in the management of bacon, cheese, &c., on its arrival from America, to prevent the articles from spoiling, or to fit them for sale after their appearance has been injured by the voyage, as is quite often the case. Mr. McHenry has every convenience for these purposes; and if we had produce of these kinds to send to England, we should consign them to him, if he would consent. Like many others of the Liverpool merchants, he has travelled extensively in the United States, and in manners and appearance is more American than English.

Ohio cheese, we were glad to find, was gaining in repute at Liverpool, since more care has been taken in the quality and condition of that sent; and Mr. McHenry assures us that a greatly increased trade might be carried on in this

article, if our farmers and shipping merchants would take proper pains to inform themselves as to the style and quality of cheese desired. We hope he will give us further information for our readers on this subject ere long. The price of best quality American cheese here is now from \$10.50 to \$11 per cwt.; ordinary, \$8 to \$9.

BRITISH FREE-TRADE ACCURACY.

THE *Journal of Commerce* says: "The great mistake of many persons, in calculating the difference between our imports and exports, arises from the fact that they confine their attention to this port, where the comparison, exclusive of specie, is greatly in favor of the imports. This will be shown by the following statement:—

YEAR ENDING JUNE 30, 1850.			
	At New-York.	All other Ports.	Total.
Imports, - - -	\$103,250,503	\$60,781,530	\$164,032,033
Exports, - - -	38,113,735	106,261,990	144,375,725
	<u>\$65,136,768</u>		<u>\$19,656,308</u>

"Thus New-York showed a nominal excess of imports of sixty-five millions, while the total excess for the whole country was but nineteen millions."

The *Journal* carefully recollects to forget to inform its readers that in addition to an excess of nineteen millions, as shown by the Custom House books, there are *at least twenty millions* of differences between the *sworn value* of imports and the *real one*—twenty-five per cent. difference being considered so reasonable as not to be complained of—and that we thus obtain an excess of imports amounting to thirty-nine millions. In addition to this, we have imported *receipts for the payment of interest* upon two hundred millions of debt contracted under the compromise tariff, and upon sixty, eighty, or a hundred millions of debt contracted under the tariff of 1846, the whole amounting to about seventeen millions of dollars, which, added to the thirty-nine millions, gives a total of FIFTY-SIX MILLIONS of imports in excess of all the food, the cotton, the tobacco, the naval stores, &c. &c., and of all the corn, that we have exported this year; and yet it is but three years since Mr. Walker assured his credulous hearers that the export of food and cotton, and of all other agricultural products, would go on so rapidly, that all the specie we had exported would speedily be returned. His *charlatanism*, and that of the *Journal of Commerce* and the *Union*, are abundantly fit to travel in company with each other.

STONE COAL IN INDIANA.—Recently, as we learn from several of our exchanges, a deposit of stone coal, said to be one hundred and thirty-eight feet deep, has been discovered in Perry county. In this county is the flourishing manufacturing town of Cannelton, the hills in the vicinity of which have long been known to contain an inexhaustible supply of an excellent quality of the mineral. Recent explorations have demonstrated that the whole of Western Indiana abounds in wonderful and exhaustless deposits of this sort.—*Madison (Indiana) Courier*, Aug. 20.

And yet Indiana exports her corn to Britain to be exchanged for iron with which to make her roads, when with the slightest effort she might bring the makers of iron to her vast coal and ore fields, and thus make a market on the land for all the products of the land, and doubling the value of the land. The whole tendency of the policy of Ohio, Indiana, and Illinois, is towards exporting their soil in the form of grain, and thus impoverishing the land, and then exporting men to regions still farther west in quest of new soils to be again exhausted.

NATURAL SCIENCES.

ON THE IMPORTANCE OF AGRICULTURISTS ACQUIRING A KNOWLEDGE OF THE
NATURAL SCIENCES AND A HABIT OF ORIGINAL OBSERVATION.

BY JAMES H. FENNELL, AUTHOR OF A "NATURAL HISTORY OF QUADRUPEDS."

NUMEROUS facts on record unite to convince me that agriculturists would find it very advantageous to habituate themselves to making minute examinations of little objects and incidents in nature which occur at every step, but are too often disregarded. It is desirable that agriculturists should not only read books on Natural History, but that they should closely observe with their own eyes everything in the fields, orchards, and gardens, that they may glean some useful hints from Nature's own volume.

In the cultivation of plants, it has been found best to proceed on such scientific principles as a correct knowledge of their structure and functions will suggest. The system of assolements, or the rotation of crops, by which the produce of our land has been quadrupled, and the acclimation of plants by hybridization or engrafting, by which means the fruits and flowers of more southern regions are reconciled to our climate, are only two out of many examples which might be adduced of the benefits conferred by Botany upon Agriculture.

While Science dictates such valuable improvements as these, the mere observation of trifling facts often suggests useful ideas. It is said that the occasional natural union of the boughs of distinct trees demonstrated the practicability of grafting, and that the observation of the circumstance of a vine shooting more vigorously after a goat had browsed on it, suggested the valuable art of pruning fruit-trees. In the sixty-third volume of the *Philosophical Transactions*, we find it related that M. Mustel, having observed that some of the flower-buds of an apple-tree had been gnawed off by a snail, in such a manner that all the petals and stamens had disappeared, being eaten up close to the calyx, which, together with the basis of the pistilum and the embryo, were left uninjured, concluded that those imperfect flower-buds would bear nothing, but was soon convinced of his mistake. Nearly all of them bore fruit; the apples were perfectly formed, and six or seven pretty large ones were seen upon each bunch. On the other hand, the snail had spared some other bunches which it could not so easily get at; but, out of ten or twelve flowers in each of these bunches, not above one or two exhibited any signs of fruit. This suggested to M. Mustel the idea that, when the flowers of trees are full blown, the prevention of the natural fall of the petals and stamens gives a greater assurance of the fructification—a fact which he several times proved; for, having cut off with the scissors the petals of apple, pear, plum, and cherry blossoms, close to the calyx, he found that almost every one of them bore fruit, whilst several of the uncut flowers bore none. Thus did a snail teach him how to render a tree more fruitful.—One of the Emperors of China, having noticed that a particular stalk in his garden produced better rice than the rest, cultivated it for several

years; and then, having fully satisfied himself and his subjects of its superiority, he distributed its grains among them for their general benefit. A Sussex farmer, having remarked that some gooseberry bushes, growing under an elder tree, were exempt from the attacks of caterpillars, was induced to try the efficacy of a decoction of elder leaves in destroying the grubs that infested his turnip crops; and he, and other farmers who repeated the experiment, found it successful.

Here I may observe that it is not only necessary that the agriculturist should be well acquainted with the nature of the different vegetables which he cultivates for economic purposes, but that he should rightly understand the causes of the several ravages and diseases to which they are subject, so that he may be able to devise proper remedies and preventions. In this wide field for observation and practice, Natural History will be found a useful guide. In nine cases out of ten, the failure of crops, and the pecuniary loss experienced thereby, arises from the attacks of some particular species of destructive insect, which, from unknown causes, has appeared in unusually great numbers. Before any effectual steps can be taken against it, it is absolutely necessary to ascertain correctly what species of insect is causing the mischief, and to study the creature's habits in all its transformations; for what will prove more or less effectual in one stage of its existence, will be totally useless, or, perhaps, increase the evil in another.—Notwithstanding the immense annual losses which must be caused by the millions of destructive insects that infest all kinds of crops, the science of Entomology is comparatively neglected by agriculturists, who are, therefore, frequently unable to give a definite description of any noxious insect to a naturalist when they require his opinion and advice.

Those husbandmen who have possessed some knowledge of Natural History have not merely been better able to cultivate their plants and protect them from the attacks of hurtful creatures, but they have ascertained thereby what creatures are harmless and useful, and therefore to be spared and encouraged. Without this power of discrimination they may be unwittingly led into the error of destroying creatures which were absolutely beneficial to them. Lady-birds, which are now well known to be most useful little creatures, feeding only upon the hurtful plant-lice, were at one time as mercilessly destroyed as the plant-lice themselves.—We are told by Mr. J. D. Salmon that, in the neighborhood of Scoulton, in Norfolk, there is a very extensive colony of black-headed gulls, (*larus ridibundus*), which are carefully protected and encouraged by the farmers, who have noticed that they render most useful service by following the plow to feast on the cockchafer grubs and other insects that it turns up to the surface. So greatly do the farmers value the

assistance of these birds, that they have implored the proprietor of the mere at Stanford Warren to discontinue gathering their eggs. In the first season after their eggs were spared, it was calculated that not less than 15,000 young birds were hatched; and the immense supply of food which this numerous progeny required, greatly increased the exertions of the old birds in obtaining for them many thousands of worms and insects.

Those farmers who, from ignorance, permit poisonous wild plants to spread unchecked, frequently sustain serious losses among their cattle; for though these animals refuse such plants when grown to maturity, yet in the early spring, when there is a deficiency of herbage, and the noxious sorts betray no sensible odor, they will eat, in their extreme eagerness for green food, almost anything that presents itself. Linnaeus mentions the death of many cattle from feeding, in early spring, upon the water-hemlock, (*cicuta virosa*;) * and, more recently, Mr. Edwin Lees has recorded the death of several fine cows from eating the roots of a poisonous umbelliferous plant which had been carelessly suffered to grow about the sides of a ditch.

Natural History, in its most extensive sense, being inseparably connected with all the arts of life, ought to form a part of the education of those who wish to promote them and to benefit by them. In every school in the kingdom, whether intended for males or females, for the rich or for the poor, Natural History should find a foremost place as an elegant and useful accomplishment. There is hardly a common animal or plant concerning which some egregious error may not be detected in the minds of the generality of what are termed well-educated people, who pride themselves on possessing a finished education—finished, indeed, before it had fairly commenced; for they who have learnt anything know that neither man's nor woman's education can ever be complete, as every day of our lives may be made to yield an improvement upon the lessons of our youth. No one will rest content with what he knows to-day, unless he wishes to be a dunce to-morrow. The wisest men love to call themselves students and laborers in the mines of Knowledge, seeking for new facts and even for new sciences that are yet in concealment, and which are destined to improve the earthly condition of man, and to impress him still more strongly with an incessant conviction of the care which God has taken to provide innumerable blessings for His industrious and grateful people—blessings which He has but temporarily hidden from us, so that we have the advantages of labor, health, and hope, in seeking for them. All the world was simply Nature when God completed it; and Natural History, in its widest meaning, is the history of that world of Nature; and, therefore, ignorance of Natural History is ignorance of God's world, which presents the most sublime and useful study man can pursue.

How general the existence of ignorance is on the subject of Natural History may be easily conceived from the absurdities relative thereto which may be found in the writings of even the most popular essayists, novelists, critics, and others who are more literary than scientific.—

* A similar plant, *anemone crocata*, has lately been discovered by Prof. Christison to be innocuous to man and animals in Scotland, though in the south of England, and also in France and Spain, it has proved itself an active poison.

[Editor.

Latin, Greek, and Heathen mythology have been too frequently learned, to the entire exclusion of any knowledge of those divine works by which we are surrounded, and whereby we may practically benefit ourselves and fellow-creatures. In Sweden, Natural History is the study of the schools by which men rise to preferment; and we are assured by the celebrated botanist, Sir J. E. Smith, that there are no men with more acute or better regulated minds than the Swedes. In the forests of Germany, especially in the small States of the interior—the Hartz, Thuringia, &c.—there are schools in which are taught Surveying and Planting, together with the Zoology, Botany, and Mineralogy of the forest. At one of the most celebrated schools in the world—namely, that of M. De Fellenberg, at Hofwyl, in Switzerland—it is the chief aim of the instructor to inculcate in his numerous pupils the importance of closely examining such surrounding objects of Nature as will most concern them when pursuing the particular professions and trades for which they are intended. The school contains about 450 scholars, among whom are many peasant boys; and no opportunity is lost of directing the attention of all, but especially of the latter, to Nature's works; which are eagerly sought after, attentively studied, and most carefully perused for future reference and instruction. The collecting of these objects affords an employment which is not only amusing and useful, but healthy. The museum thus formed is constantly increasing, both in variety and utility. The plants it contains are not classified scientifically, but according to their properties, uses, and localities.—Seeds and specimens of useful sorts of wood enrich this botanical collection. Quadrupeds, birds, reptiles, and insects are also studied and preserved by the pupils. The winter evenings are instructively spent in this room by the poor children with their master; and on Sundays, after church, they go forth to the hills and woods, seeking fresh treasures for their museum. At Carra, in the neighborhood of Geneva, there is also an agricultural school, where the children are taught the economic Botany of their native country, besides a variety of other useful subjects. They amuse themselves with botanical excursions, and the little students carefully bring home and preserve all the plants which they collect.

Hogg, the Ettrick shepherd, declares that those writers speak falsely who assert that our laborers, herdsmen, and peasants in general, have little or no feeling of the beauty of Nature; and he might have added that they are frequently close observers of her works. This fact induces me to believe that much benefit would arise by giving a more scientific aim to their habit of observation. How readily the shepherd notices slight external differences, even in objects of the same species, is exhibited in his ready discrimination of any one sheep in a flock consisting of even many hundreds, though to the casual observer all the sheep seem exactly alike. Without some nice study of Nature's minute distinctions, the shepherd could not so easily detect any sheep in a large flock.

The aptitude of peasants to receive scientific truths, when their curiosity is properly awakened, might be illustrated by mentioning a glorious list of eminent philosophers who have arisen from the ranks of shepherds, plowmen, &c.—We shall, however, mention but two examples. At Bagis-Boost, near the hot springs of the Pyra-

enees, lives Gaston Sacaze, whose name has been well known for the last twelve years to philosophical travelers in those parts. Without even quitting his native mountain, or neglecting the care of his flock and the cultivation of his fields, he has found sufficient time to acquire a good systematic knowledge of the Mineralogy, Botany, and Entomology of his native district, entirely unassisted by any teacher except his own eyes and a few books. That he might read the works of Linnæus, he has taught himself Latin. Besides systematically classifying all the mountain plants, he has drawn and colored them, so as to form a rich herbal. At his humble home he has also formed a collection of minerals, stones, insects, &c.; and, when tending his flock, he amuses himself with a violin of his own constructing, and songs of his own composing. So much notice have his talents attracted, that his portrait has lately been taken by the celebrated painter, Devéria. This peasant naturalist calls to mind the instance of John Bertram, the famous Pennsylvanian botanist, who was originally an agricultural laborer, but having his intellectual curiosity excited by an attentive contemplation of a violet, and then dreaming about its beauty and structure, immediately set about learning all the Latin that was requisite to read botanical works.

Great Britain abounds in grammar schools for the poor, but where can it show anything like the forest schools of Switzerland, Sweden, and Germany? Where are the instructors to teach our peasantry those sciences which they would be practically benefited by understanding?—We want to see a full consummation of the benevolent wish of Dr. Drummond, that a lecture-room, a museum, and a useful library should be attached to every village, as regularly as its church or chapel; and that a portion of time should be appropriated to teaching Natural History, and even Natural Theology, to the peasantry. Geology and Agricultural Chemistry should also be made to throw their light upon the laborer's mind, and his children should be taught something about these subjects, as well as grammar and ciphering. Agriculture would more rapidly attain to perfection, if all, without exception, who are concerned in it, were made clearly to understand the processes on which its fullest success depends. The laborer could not fail to become more skillful and more interested in his employment, if he were taught to practice it as a science, and not merely as a toil.

The culture of plants will become a comparatively easy process when we are better acquainted with their peculiar functions, and with the chemical elements which they require for their growth and maturation. We must not be content with knowing what are their respective natural localities, climates, and seasons, but must learn what chemical gases each species imbibes from the atmosphere, through its leaves, and what substances from the soil, through its roots. "If a plant be distinguished by its containing a notable proportion of soda, silica, &c. the soil in which it is to be grown must," as a writer in the *Edinburgh Journal* justly observes, "contain these elements, otherwise the attempt will be abortive;" for a plant can no more create soda or silica within itself than it can form water for its support, independent of the soil or atmosphere. From a knowledge of the principles, therefore, a rational theory of Agriculture may be formed; and what has hitherto been little better than an expensive and

often distressing system of trial and error, becomes a science guided by fixed laws. Agriculture will always have to contend with the fluctuations of season and climate; but it is for human ingenuity to modify their influence, and this can only be effected by rational and scientific procedure. As yet, the science of Agriculture is only in its infancy; but the time is not far distant when it will rank with other maturer branches of knowledge—when every soil will be systematically treated for the species of crop to be raised upon it—when manures will be manufactured as we now manufacture soda and sulphuric acid—when plants will be fed and stimulated as we now treat animals—in short, when the farmer will sow and reap with as much security as the distiller produces his spirit. The value of the science of Chemistry to the agriculturist may be judged from the fact that, when the great French chemist, Lavoisier, took a quantity of land into his own cultivation, he very soon succeeded in doubling its produce.

If the proprietor of land would explore its mineral productions with a view to speculation in them, he ought previously to obtain some knowledge of Geology. To an ignorance of this subject may be traced the lavish expenditure of money in many futile attempts to find coal in situations where the slightest regard to the principles that have been established, and the rules that have been discovered, relative to the association of coal with certain stratified rocks, would have saved those individuals from ruin and misery. As a striking example of the serious consequences that have ensued from seeking coal without acting under the guidance of geological principles, Sir John Herschel relates that an attempt was made, not many years since, to establish a colliery at Bexhill, in Sussex—the appearance of thin seams and sheets of fossil wood and wood coal, with some other indications similar to what occur in the neighborhood of the great coal beds in the north of England, having led to the sinking of a shaft, and the erection of machinery on a scale of vast expense. Not less than £800,000 are said to have been expended in this project, which, it is almost needless to add, proved completely abortive, as every geologist would at once have declared it must—the whole assemblage of geological facts being adverse to the existence of a regular coal bed in the Hastings strata; while this, on which Bexhill is situated, is separated from the coal measures by a series of interposed beds, of such enormous thickness as to render all idea of penetrating through them absurd.—The history of mining operations is full of similar cases, where a very moderate acquaintance with the usual order of Nature, to say nothing of theoretical views, would have saved many a sanguine adventurer from utter ruin.

In learning the nature of the underlying soils, and the character of the surface soil, which in many instances depends upon the decomposition of the subterranean strata, Geology affords most valuable assistance. From the mere description of the character of any line of country, the geological agriculturist might form a tolerably accurate notion as to what must be the productions, pursuits, wants, and even the general constitutions of the inhabitants; and, if he possessed a knowledge of Geological Botany and Geological Entomology, he would also be able to predict what genera of plants and insects were there most plentiful. Geology could point out to him stores of lime and mineral manure in

places where they were not generally known to exist. Without an ample supply of water, no farming can be prosperously conducted; and here again Geology comes to our aid, and suggests the formation of those Artesian wells which have given the precious blessing of water to many previously dry districts, as in France and various parts of England. Observation on the surface of the earth detects the deep reservoirs below. "Search and ye shall find;" for wherever deposits of a light and porous nature occur in hollows and depressions of firmer and older rocks, water will penetrate until it has accumulated into immense subterranean pools—the pressure of the superior strata preventing the fluid from exhibiting itself to the eye, except in slight oozings at the indented parts of the surface. When proper borings are made through the strata, the water is released from its confinement, and rushes up copiously from the valley or hollow. Beneath those spots of ground over which swarms of gnats are continually seen dancing in the air, the existence of wells may be suspected; for these insects disport themselves always where there is the greatest evaporation. It was by a secret knowledge of this fact that the professors of the divining rod detected hidden wells. Slight superficial observation may also detect concealed mineral springs, which may add to the value of an estate. Thus the discovery of the chalybeate spa at Dorton, in Buckinghamshire, originated from some vil-

lager's attention being attracted to the circumstance that a little stream, which issued from a small orifice, destroyed the plants that came within its course; the few blades of grass that were spared bore a thick incrustation of oxide of iron; and the surface of the ground, which, for a few yards on either side of its channel, assumed a yellow and scorched appearance, was covered with a similar metallic deposit. The peasants called it the *Alum Well*—the taste of that substance being most apparent to them. It was also observed here, as at the Bath waters, that diseased cattle voluntarily and repeatedly repaired to the little stream, and rapidly recovered from their maladies. It was noticed that it afforded great relief to horses suffering from that very obstinate and almost incurable disorder, the mange. Owing to the powerful chalybeate qualities of this water, the manure of the cattle that drink of it will burn to a cinder, and is collected for fuel, in the same way that the Peruvian miners and mountaineers make bright and clear fires of the dung of the llamas and alpacas.

These several facts will, I trust, suffice to show to every reader the policy of the agriculturist greatly enlarging his present sphere of knowledge, and the frequent advantages that would result from his practicing a habit of original observation, with a view of deriving important suggestions from apparently trifling facts.

[*Jour. of High. and Agri. Soc. of Scotland.*]

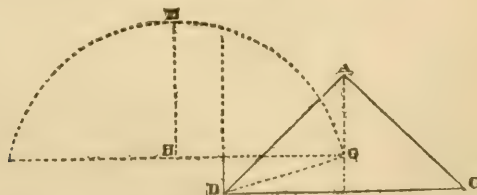
THE CENTRE OF GRAVITY.

WE have heretofore alluded, but only incidentally and scarcely in a way to make ourselves understood, to the various studies which, (although the connexion is not at first apparent,) are yet necessary to the most efficient practice of the Agricultural art. Among these, the *general principle of Mechanics* should be esteemed as of the highest importance. We will suppose them to be inculcated in Common Schools, by means of lectures and illustrations, clear and simple as we find the following, for instance, in

part of one of *Dr. Lardner's Lectures on THE CENTRE OF GRAVITY*; and who does not see how useful through life would be tuition of this sort:

When the line of direction falls within the base, bodies will always stand firm, but not with the same degree of stability. In general, the stability depends on the height which the centre of gravity must be elevated before the body can be overthrown. The greater this height is, the greater in the same proportion will be the stability.

Fig. 23.



Let B A C, fig. 23, be a pyramid, the centre of gravity being at G. To turn this over the edge B, the centre of gravity must be carried over the arch G E, and must therefore be raised through the height H E. If, however, the pyramid were taller relatively to its base, as in fig. 24, the height H E would be proportionally less; and if the base were very small in reference to the height, as in fig. 25, the height H E would

be very small, and a slight force would throw it over the edge B.

It is obvious that the same observations may be applied to all figures whatever, the conclusions just deduced depending only on the distance of the line of direction from the edge of the base, and the height of the centre of gravity above it.

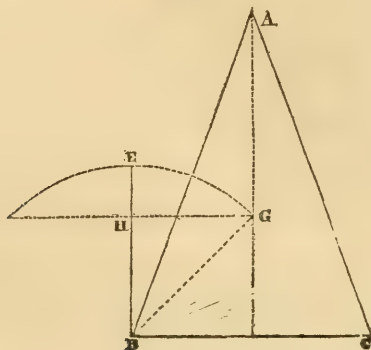
Hence we may perceive the principle on

which the stability of loaded carriages depends. When the load is placed at a considerable elevation above the wheels, the centre of gravity is elevated, and the carriage becomes proportionally insecure. In coaches for the conveyance of passengers, the luggage is therefore sometimes placed below the body of the coach; light

parcels of large bulk may be placed on the top with impunity.

When the centre of gravity of a carriage is much elevated, there is considerable danger of overthrow, if a corner be turned sharply and with a rapid pace; for the centrifugal force then acting on the centre of gravity will easily raise

Fig. 24.



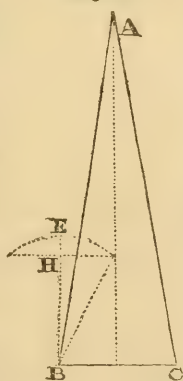
it through the small height which is necessary to turn the carriage over the external wheels.

Fig. 25.

The same wagon will have greater stability when loaded with a heavy substance which occupies a small space, such as metal, than when it carries the same weight of a lighter substance, such as hay; because the centre of gravity in the latter case will be much more elevated.

If a large table be placed upon a single leg in its centre, it will be impracticable to make it stand firm; but if the pillar on which it rests terminate in a tripod, it will have the same stability as if it had three legs attached to the points directly over the places where the feet of the tripod rest.

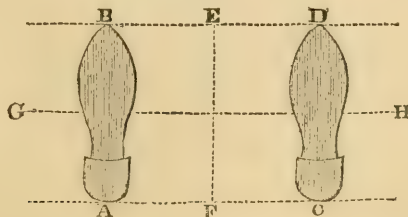
When a solid body is supported by more



points than one, it is not necessary for its stability that the line of direction should fall on one of those points. If there be only two points of support, the line of direction must fall between them. The body is in this case supported as effectually as if it rested on an edge coinciding with a straight line drawn from one point of support to the other. If there be three points of support, which are not ranged in the same straight line, the body will be supported in the same manner as it would be by a base coinciding with the triangle formed by straight lines joining the three points of support. In the same manner, whatever be the number of points on which the body may rest, its virtual base will be found by supposing straight lines drawn, joining the several points successively. When the line of direction falls within this base, the body will always stand firm, and otherwise not. The degree of stability is determined in the same manner as if the base were a continued surface.

Necessity and experience teach an animal to adapt its postures and motions to the position of the centre of gravity of his body. When a man stands, the line of direction of his weight must fall within the base formed by his feet. If A B C D, fig. 26, be the feet, this base is the space A B C D. It is evident that the more his toes are turned outward, the more contracted the base

Fig. 26.



will be in the direction E F, and the more liable he will be to fall backward or forward.—Also the closer his feet are together, the more contracted the base will be in the direction G

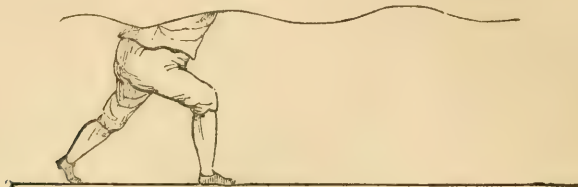
H, and the more liable he will be to fall toward either side.

When a man walks, the legs are alternately lifted from the ground, and the centre of gravi-

ty is either unsupported or thrown from one side to the other. The body is also thrown a little forward, in order that the tendency of the centre of gravity to fall in the direction of the toes may assist the muscular action in propelling the body. This forward inclination of the body increases with the speed of the motion.

But for the flexibility of the knee-joint, the labor of walking would be much greater than it is; for the centre of gravity would be more elevated by each step. The line of motion of the centre of gravity in walking is represented by fig. 27, and deviates but little from a regular horizontal line, so that the elevation of the cen-

Fig. 27.



tre of gravity is subject to very slight variation. But if there were no knee-joint, as when a man has wooden legs, the centre of gravity would move as in fig. 28, so that at each step the weight

of the body would be lifted through a considerable height, and therefore the labor of walking would be much increased.

If a man stand on one leg, the line of direc-

Fig. 28.



tion of his weight must fall within the space on which his foot treads. The smallness of this space, compared with the height of the centre of gravity, accounts for the difficulty of this feat.

The position of the centre of gravity of the body changes with the posture and position of the limbs. If the arm be extended from one side, the centre of gravity is brought nearer to that side than it was when the arm hung perpendicularly. When dancers, standing on one leg, extend the other at right angles to it, they must incline the body in the direction opposite to that in which the leg is extended, in order to bring the centre of gravity over the foot which supports them.

Fig. 29.

When a porter carries a load, his position must be regulated by the centre of gravity of his body and the load taken together. If he bore the load on his back, fig. 29, the line of direction would pass beyond his heels, and he would fall backward. To bring the centre of gravity over his feet, he accordingly leans forward, fig. 30.

If a nurse carry a child in her arms, she leans back for a like reason.

When a load is carried on the head, the bearer



stands upright, that the centre of gravity may be over his feet. In ascending a hill, we appear to incline forward, and in descending, to lean backward; but in truth we are standing upright with respect to a level plane. This is necessary to keep the line of direction between the feet, as is evident from fig. 31.

A person sitting on a chair which has no back, cannot rise from it without either stooping forward to bring the centre of gravity over the feet, or drawing back the feet to bring them under the centre of gravity.

A quadruped never raises both feet on the same side simultaneously, for the centre of gravity would then be unsupported. Let $A B C D$, fig. 32, be the feet. The base on which it stands is $A B C D$, and the centre of gravity is nearly over the point O , where the diagonals cross each other. The legs A and C being raised together, the centre of gravity is supported by the legs B and D , since it falls between them; and when B and D are raised, it is, in like manner, supported by the feet A and C . The centre of gravity, however, is often unsupported for a moment; for the leg B is raised from the ground

Fig. 30.



Fig. 31.

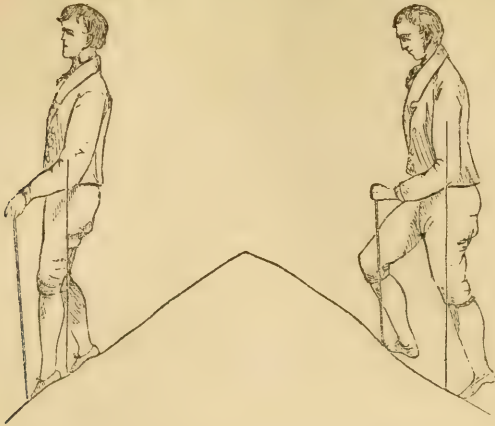
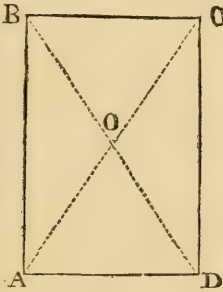


Fig. 32.



before A comes to it, as is plain from observing the track of a horse's feet, the mark of A being upon or before that of B. In the more rapid paces of all animals the centre of gravity is at intervals unsupported.

The feats of rope-dancers are experiments on the management of the centre of gravity. The evolutions of the performer are

found to be facilitated by holding in his hand a heavy pole. His security in this case depends, not on the centre of gravity of his body, but on that of his body and the pole taken together.—This point is near the centre of the pole, so that, in fact, he may be said to hold in his hands the point on the position of which the facility of his feats depends. Without the aid of the pole, the centre of gravity would be within the trunk of the body, and its position could not be adapted to circumstances with the same ease and rapidity.

The centre of gravity of a mass of fluid is that point which would have the properties which have been proved to belong to the centre of gravity of a solid, if the fluid were solidified without changing in any respect the quantity or arrangement of its parts.

THE PRINCIPLES OF ARTIFICIAL MANURING.

BY PROFESSOR JUSTUS LIEBIG.

If we compare the experience of farmers regarding the fertility of the soil and the quantity of its productions, we are surprised by a result which surpasses all others in general application and uniformity.

It has been observed, that in every part of the globe where Agriculture is carried on, in all varieties of soil, and with the most different plants and modes of cultivation, the produce of a field on which the same or different plants have been cultivated during a certain number of years, decreases more or less in quantity, and that it again obtains its fertility by a supply of excrements of man and animals, which generally are called manure; that the produce of the fields can be increased by the same

matters, and that the quantity of the crop is in direct proportion to the quantity of the manure.

In former times scarcely any attempt was made to account for the cause of this curious property of the excrements of man and animals. Without taking into consideration the origin of the excrements and the relation they bear to the food, it is not astonishing that their effect was ascribed to a remnant of vital power which should qualify them to increase the vitality in plants. Ascribing their influence on the fertility of the fields to an incomprehensible occult cause, it was forgotten that every force has its material substratum; that with a lever, in a mathematical sense,

which possesses no extension and gravity, no effect can be produced, no burden raised.

Guided by experience, which is the fundamental basis of all inductive science, and which teaches us that for every effect there is a cause, that every quality, as, for instance, the fertility of a field, the nourishing quality of a vegetable, or the effect of a manure, is intimately connected with and occasioned by something which can be ascertained by weight and measure; modern science has succeeded in enlightening us on the cause of the fertility of the fields and on the effects which are exercised on them by manure.

Chemistry has shown that these properties are produced by the composition of the fields; that their fitness for producing wheat or any other kind of plant bears a direct proportion to certain elements contained in the soil, which are absorbed by the plants. It has likewise shown that two fields, of unequal fertility, contain unequal quantities of these elements; or that a fertile soil contains them in a different form or state from another, which is less fertile. If the elements are contained in the soil in sufficient quantities, it produces a rich crop; if it be defective even in one of them only, this is shown very soon, by the impossibility of growing on it certain kinds of plants.

Moreover, it has proved with certainty what relations these elements of the soil bear to the development of the plants. Chemical analysis has demonstrated that a certain class of these elements is contained in the seeds; others, in different proportions, in the leaves, roots, tubers, stalks. They are mineral substances, and as such, are indestructible by fire, and consequently remain as ashes after the incineration of the plants or of their parts. Many of these elements are soluble in pure water, others only in water containing carbonic acid, as rain-water; all were absorbed from the soil by the roots of the plants in a dissolved condition. It has been shown that, in a field, those elements which remain after the incineration of the grain or seeds, are not present in a sufficient quantity, no wheat, no barley, no peas—in a word, none of those plants can be cultivated on that field which are grown on account of their seeds. The plants which grow on such a field produce stalks and leaves; they blossom, but do not bear fruit. The same has been observed regarding the development of leaves, roots and tubers, and the mineral elements which they leave behind after their incineration. If, in a soil in which turnips or potatoes are to be cultivated, the elements of the ashes of these roots are wanting, the plants bring forth leaves, stalks, blossoms and seeds, but the roots and tubercles are imperfect. Every one of the elements which the soil gives up to the plants in a direct quantitative proportion to the production of the separate elements of the plants. Two fields, which, under otherwise equal circumstances, are unequally rich in mineral elements of the grain, produce unequal

crops. One containing them in larger quantity produces more than another containing them in less. In the same manner, the capacity of a soil to produce tuberculous plants, or such as have many leaves, depends upon its amount of those elements which are found in the ashes of such plants.

It results from this with certainty, that the mineral substances which are furnished by the soil, and which are found again in the ashes of plants, are their true food; that they are the conditions of vegetable life.

It is evident, that from a field in which different plants are cultivated, we remove with the crop a certain quantity of these elements; in the seeds those mineral parts which the soil had to provide for *their* development, and in the roots, tubercles, stalks and leaves those elements which are necessary for *their* production. However rich the field may be in these elements, there can be no doubt that, by several cultures, it becomes more and more impoverished; that for every plant a time must arrive when the soil will cease to furnish, in sufficient quantity, those elements which are necessary for a perfect growth. Even if such a field, during many years, had produced twenty-five or thirty fold the amount of the seed, for instance, of wheat, experience shows that the crop gradually decreases, until at last the amount will be so small as to approach the plant in its wild state, and not repay the cost of cultivation.

According to the unequal quantity in which the mineral elements of grain, tubercles, roots, seeds, leaves, are contained in a soil, or according to the proportions in which they have been removed in the crop, the land may have ceased to be fertile for roots and tubercles, but it may yet produce good crops of wheat. Another may not produce wheat, but potatoes and turnips may thrive well in it. The mineral substances contained in a fertile soil, and serving as food to the plants, are taken up by them with the water, in which they are soluble. In a fertile field they are contained in a state which allows of their being absorbed by the plant and taken up by the roots. There are fields which are rich in these elements, without being fertile in an equal proportion; in the latter case they are united with other elements into chemical compounds, which counteract the dissolving power of water. By the contemporaneous action of water and air—of the oxygen and carbonic acid of the atmosphere—these compounds are decomposed, and those of their constituent elements, which are soluble in water, but which had been insoluble by the chemical affinity of other other mineral substances, reobtain the property of being absorbed by the roots of the plants.

The duration of the fertility of a field depends on the amount of the mineral aliments of plants contained in it, and its productive power for a given time is in a direct proportion to that part of its composition which possesses the capacity of being taken up by the

plant. A number of the most important agricultural operations, especially the mechanical, exercise an influence on the fertility of the fields only thus far, that they remove the impediments which are opposed to the assimilation of the mineral food into the vegetable organism. By plowing, for instance, the surface of the field is made accessible to air and moisture. The nutritious elements contained in the soil in a latent state, acquire, by these operations, the properties necessary for their transmission into the plants. It is easy to conceive the useful influence which, in this respect, is exercised on the produce of the fields by the care and industry of the farmer. But all these labors and efforts do not increase the amount of mineral elements in the field: in rendering soluble in a given time a larger quantity of the insoluble substances, and obtaining by these means a richer crop—the time is merely hastened in which the soil becomes exhausted.

The experience of centuries has shown that, with the aid of manure, of the excrements of animals and man, with which we supply those fields which have ceased to produce crops of grain, &c., serving as food for man and animals, in a sufficient quantity, the original fertility can again be restored; an exhausted field, which scarcely yielded back the seed, is made to produce a twenty and more fold crop, according to the proportion of the manure provided.

Regarding the mode of action of manures, it has been observed that all excrements do not exercise an equal influence on plants. The excrements of sheep and cattle, for instance, increase in most fields the crop of roots and herbaceous plants to a far greater degree than those of man and birds, (guano.) The latter act far more favorably on the production of grain crops, especially if they are added to the animal excrements, and are given to the fields at the same time.

A field, for example, which has lost its fertility for potatoes and turnips, but on which peas and beans still thrive, becomes far more fertile, by a supply of the excrements of horses and cows, for a new crop of potatoes and turnips, than by manuring it with the excrements of man or with guano.

The most accurate experiments and analyses have pointed out that the excrements of man and animals contain those substances to the presence of which the fertility of the soil is due. The fertilizing power of manure can be determined by weight, as its effect is in a direct ratio to its amount in the mineral elements of the food of plants. The truth of the result of these chemical analyses must be evident to every one who inquires into the origin of excrements.

All the excrements of man and animals are derived from the plants of our fields; in the oats and hay which serve as food for the horse, in the roots which are consumed by a cow, there is a certain quantity of mineral ingredients. A horse, in consuming 15 lbs.

of hay and $4\frac{1}{2}$ lbs. of oats per day, consumes 21 ounces of those substances which the hay and the oats took from the fields; he consumes annually 480 lbs. of these constituent elements of the soil, but only a very small portion of them remains in his body. If a horse, during one year, increases 100 lbs. in weight, this increase contains only 7 lbs. of those mineral substances which were contained in the food. But what has become of the 473 lbs. which we cannot detect in his body?

The analysis of the fluid and solid excrements which the horse gives out daily, shows that the ingredients of the soil which do not remain in the body of the animal are contained in its excrements; it shows that in an adult animal, which from day to day neither increases nor decreases in weight, the amount of the mineral ingredients of the excrements is equal in weight to the mineral ingredients of the food.

As with the horse, so it is with all animals. *In all adult animals the excrements contain the ingredients of the soil according to the quantities and relative proportions in which they are contained in their food.*

The mineral substances of the food which have remained in the body of the animals, and served to increase their weight, are found again in the bones and excrements of man, who consumes the flesh of these animals.

The excrements of man contain the elements of the soil, of bread or of grain, of vegetables and meat.

These discoveries explain, in a most simple and satisfactory manner, the fertilizing effect which manure produces on our fields.

It is now obvious why manure renders again fertile the exhausted fields; why, by its means, their productiveness can be augmented; why the latter is in a direct ratio to the quantity of manure administered.

The exhaustion of the soil by subsequent crops, its decrease in fertility, is produced by the gradual removal of the mineral elements, in a soluble state, which are necessary for the development of our cultivated plants. By a supply of manure they are again restored to the state suited to serve as nourishment to a new vegetation.

If the supply of the removed elements of the soil, by means of manure, be sufficient, if the quantity taken away be restored, the original fertility reappears; if the supply be greater, the produce increases; a defective supply gives a smaller produce.

It is now explained why the different kinds of manure exercise an unequal effect upon the fields.

The excrements of man and guano, containing especially the mineral ingredients of grain and of meat, exercise far greater influence on the amount of produce of grain in a field in which these ingredients are wanting, even if those of the leaves and stalks are present in sufficient quantity, than the excrements of an animal which feeds on roots or green fodder.

The excrements of the latter contain the mineral elements of the leaves, stalks, and roots in prevailing quantity, and have a greater value for the production of roots and foliaceous plants than those of man or of birds, which contain only a small quantity of those mineral substances which they require for their development.

If we compare, for instance, the composition of guano with the excrements of the cow—solid and fluid excrements in the same state of dryness—it is found, that in an equal weight, the latter contain five to seven times more of the mineral ingredients of turnips and potatoes than the former. If, in a soil which is deprived of all those mineral substances, we wish to force a crop of turnips by means of guano, we require at least five times more of guano than dung of cattle.

The same thing happens, though *vice versa*, if we wish to produce a rich crop of grain by means of animal excrements; in this case, one part of guano and five parts of animal excrements, produce the same effect as thirteen to fifteen parts of animal excrements.

To understand the proper meaning of these numerical proportions, it is sufficient to mention that 400 lbs. of bones contain as much phosphoric acid as 1,000 lbs. of wheat; these 400 lbs. of bones can furnish sufficient phosphoric acid to eight acres.

If we take the importation of bones into Great Britain in the last ten years to amount to 1,000,000 of tons, enough phosphoric acid has been supplied to the fields for 25,000,000 tons of wheat; but only a small proportion of the phosphoric acid of the bones is in a state to be assimilated by the plants and applied to the formation of grain. The plants, in order to apply the other far greater part of the phosphoric acid to their formation, must find a certain quantity of alkaline bases beside the bone-earth, which are not given to the plants in the bones, because they contain neither potash nor soda.

To have increased the fertility of the fields in the right proportion, 800,000 tons of potash ought to have been added to the 1,000,000 tons of bones, in a suitable form.

The same is the case with guano: 60 to 100 lbs. of it are sufficient to furnish phosphoric acid to one acre of turnips; but the four to eightfold quantity is required to furnish the turnips with the necessary alkaline bases, and it is still doubtful whether they can be at all provided with the latter, by means of the salts with the alkaline bases, which the guano contains.

At a time when the necessity of the mineral substances for the growth and development of plants, and the direct relation which the effect of manure has to its amount of the same substances, had not been ascertained, a prominent value was ascribed to the organic matters which it contains. For a long time it was thought that the produce of a field of those substances containing nitrogen, which serve as food for man and animals, stood

in a direct proportion to the nitrogen contained in manure. It was believed that its commercial value, or its value as manure, might be expressed in per cents. by its proportion of nitrogen, but later and more convincing observations have induced me to contradict this opinion.

If the nitrogen and carbonic acid formed by the decay and decomposition of the vegetable ingredients of manure were the cause of its fertilizing power, this ought also to be seen if the mineral substances were excluded. Direct experiments have shown that the nitrogen of the excrements can be assimilated by the plants in the form of ammonia, but that ammonia, as well as carbonic acid, although it is indispensable for the development of all plants, can accelerate the growth of plants and increase the produce of a field of grain, roots and tubercles *only*, if, at the same time, the mineral ingredients contained in the manure which is applied, are in a state in which they are suited for assimilation. If the latter are excluded, carbonic acid and ammonia have no effect on vegetation.

On the other hand, experience has shown that on many fields produce which is rich in carbon and ammonia, can be increased to an extraordinary amount, without any supply of such matters as furnish these substances.

On fields which are provided with a certain quantity of marl or slaked lime, or with bone-earth and gypsum—substances which cannot give up to the plants either carbon or nitrogen—rich crops of grain, tubers and roots are obtained in many places, entirely in contradiction with the view which ascribes the effect of the manure to its amount of ingredients containing nitrogen or carbonic acid.

To explain this process, which is so opposite to the common opinion, the marl, the lime, the gypsum, the alkalies and the bone-earth were regarded as stimulants, which acted on the plants like spices on the food of man, of which it was believed that they increased the power of assimilation, and allowed the individuals to consume larger quantities of food.

This view is contradicted, if we consider that stimulants mean such substances as do not serve for the nourishment of the organism or for the formation of organic elements, and can only increase the weight of the body, if at the same time a certain increase of food is given. In supplying the fields with the above mentioned substances, the weight of the plants became increased in all their separate parts, without their having been provided with the quantity of food which according to theory, was necessary to this extraordinary increase—viz., with carbonic acid and ammonia.

Chemical analysis shows that these so-called stimulants are either actual ingredients of manure, as gypsum, bone-earth and the active substances of the marl, or that they are the means by which the mineral elements contained in the soil are resolved into a state

adapted for being assimilated by the plants; this is generally effected by the application of slaked lime. They consequently exercise on the vital process of the plants not a mere stimulus like the spices, but are consumed for the development of the leaves, seeds, roots, &c., they become constituent parts of them, as can be shown with certainty by chemical analysis.

The success which has followed the application of these substances to the fields has explained, in a most striking manner, the origin of the carbon and nitrogen in the plants.

In the marl, in the bone-earth, in the gypsum, in the nitrate of soda, no carbon is provided to the fields; and yet, in many cases, the same produce, in some even a higher one, is obtained, than by the application of a manure containing carbon and nitrogen. As the soil, after the crop, does not contain less carbonaceous or nitrogenous substances, it is evident that these products, which had been obtained without any carbonic or azotic manures, must have got the carbon and nitrogen of their leaves, roots and stalks from the atmosphere; it follows, therefore, that the productiveness of the fields cannot be increased in proportion with a supply of carbonaceous and azotic substances, but that the fertility depends only on the supply of those ingredients which should be provided by the soil.

The soil not only serves the purpose of fixing the plants and their roots; it participates in vegetable life through the absorption of certain of its elements. If these elements are present in sufficient quantity, and in appropriate proportions, the soil contains the conditions which render the plant capable of absorbing carbonic acid and ammonia from the air, which is an inexhaustible storehouse for them, and renders their elements capable of being assimilated by their organism.

The agriculturist must, therefore, confine himself to giving to the field the composition necessary to the development of the plants which he intends to grow; it must be his principal task to supply and restore *all* the elements required in the soil, and not only one, as is so frequently done; the ingredients of the air, carbonic acid and ammonia, the plants can, in most cases, procure without man's interference; he must take care to give to his field that physical condition which renders possible and increases the assimilation of these ingredients by the plant; he must remove the impediments which diminish their effect.

The favorable influence which bone-earth, gypsum, nitrate of soda, exercise on the fields has induced many farmers to the belief, that in applying them they can dispense with manure or with the other elements of the soil; it requires, however, only little attention to see the great error of this opinion. We observe that the effect of these substances is not equal on all fields; in one place the amount of produce is increased by the lime, by the bone-earth, and by gypsum; in another country, or on other fields, these substances in no

way favor vegetation. From this arise the contradictory views of farmers regarding these matters as manures. If one farmer thinks the liming of his fields quite indispensable for rendering them fertile—another declares that lime produces no effect at all.

The reason of this difference is very simple. The examination of a soil upon which lime has had no effect, shows that it was already rich in this substance: it farther shows that its effect extends only to those kinds of soil in which lime is wanting, or in which it is found in too small a quantity, or in a condition which is not suited to its assimilation by the plant. Lime especially serves for resolving the silicates of alumina (clay) and consequently it cannot fertilize soils in which clay is wanting, for instance, sandy soils. It must be apparent to every one, that on the calcareous and gypseous fields of France and England one-half per cent. of gypsum or lime can have no influence at all on vegetation. This can be said with equal justice of bone ashes, and of every other mineral substance serving for the nourishment of plants.

If these substances exercise a favorable effect, some of the constituents of the soil or manure are restored, which are indispensable to the nourishment of plants, and which have been wanting in the soil. If this be the case the other bodies, equally necessary, must be present in sufficient quantity. On a field in which sulphate of lime has acted favorably, but in which clover had been cultivated without it, the crop was 2,200 pounds of clover-hay, in which 53 pounds of potash were removed. On the same field, after it had been dressed with gypsum, 8,000 pounds of hay were produced, which contained 191 pounds of potash. If this potash had not been present in the soil, the gypsum would have had no effect—the crop would not have been increased. On fields which are richly provided with all other mineral ingredients, with the exception of gypsum, the latter is applied with the greatest success. But if gypsum is present in the soil, the same effects are produced by ashes and lime, as is the case in Flanders. On fields in which phosphate of lime is wanting, bone ashes increase the produce of grain, clover, or grass, and on argillaceous soil, lime produces a decided improvement. All these substances act only on those fields which are defective in them, and if the other elements of the soil are present. The latter cause the former to come into action, and *vice versa*. The farmers who thought that by using lime, gypsum, bone-earth, &c., they might dispense with animal manure, very soon observed that their fields deteriorated. They observed that after a third or fourth successive manuring with those simple substances the produce decreased; that, as is the common expression, the soil became tired of the manure, that at last the field scarcely produced the seed.

It is evident from this, what is the action of the mineral elements in the soil. If in fact

in the first years, the produce of the soil had increased by the application of bone ashes, or by a single element of the manure—if this increase was dependent on the amount in the soil of the other mineral elements, a certain quantity of those was annually taken up by the plants and removed in the harvest, and a time must at last arrive in which it is exhausted by the repeated removal; the soil must become barren, because of all removed elements only one or the other, and not all of them in a right proportion, have been restored.

The right proportion of the supply is, however, the only true scientific basis of Agriculture.

If we subject the fluid and solid excrements of men and animals to an exact analysis, and compare the elements of them according to their weight, some constant relations between these elements impress themselves upon the mind, the knowledge of which is of some importance.

If the excrements of an animal are collected with some care and left to themselves for some days, their nitrogen appears to have been converted more or less perfectly into ammonia. In the fluid excrements, in the urine, the salts of the food, which are soluble in water, are found in the form of alkaline carbonates, or of sulphates, phosphates, and other salts, with alkaline bases. In the solid excrements or *fæces*, silica, if it was contained in the food, earthy carbonates, and phosphates are the principal ingredients.

The quantity of alkaline carbonates bears a certain proportion to the amyllum, sugar, pectine, or gum of the food. The urine of an animal which has been fed with potatoes or turnips, is rich in alkaline carbonates; the potatoes, however, consist principally of amyllum; the chief ingredients of the turnips are sugar and pectine. The urine of a horse which has been fed with hay and oats, is comparatively poor in alkalies, if compared with the former.

It is farther shown that the ammonia or the nitrogen of the excrements bears a certain proportion to the phosphates; the azote increases or decreases with the quantity of the phosphates in a manner that both can serve as a measure for each other, although not quite as an accurate one. It is not quite accurate, because the gum and the amyllum also contain a certain, although small, quantity of phosphate of lime, as has been proved in my laboratory.

The ammonia of the excrements is of course derived from the nitrogenous substances in the food: the phosphates are likewise constituents of the latter. In the composition of the food an equally constant proportion exists between both. A given weight of gluten or casein in peas or in grain always corresponds with a certain weight of phosphates; if the grain or the vegetable is rich in these nitrogenous products of vegetable life, it is also rich in phosphates; if it is defi-

cient in them the quantity of the latter decreases in an equal ratio.

As the amount of nitrogen in manure is a measure for its amount of phosphates, and as the manure contains besides these the other ingredients of the soil which are required by the grain or by the other vegetables for their development, and taken up by them from the soil, it is easily conceived what was the cause of the error in regarding the nitrogen of the manure as the principal cause of its efficacy. The reason was, that the ammonia of the manure is always accompanied by the mineral elements which affect its nourishing qualities, because they render its assimilation into the organism of the plant, and its transition into a nitrogenous constituent, possible. Without phosphates, and without the other mineral elements of the food of plants, the ammonia exercises no influence whatever upon vegetable life.

If it has been shown that the fertility of the soil depends on certain mineral substances; if the restoration of the fertility of exhausted fields by means of the excrements of man and animals depends on their proportions of these matters; if the effect of the manures *accelerating* the vegetation depends upon their proportions of ammonia, it is clear that we can only dispense with the latter when we provide *all* efficacious elements exactly in those proportions and in that form most proper for assimilation by the vegetable organism in which they are found, in the most fertile soil or in the most efficacious manure.

According to our present knowledge of the effect of the constituent parts of manure, I feel convinced that it is indifferent to the plants from which source they are derived. The dissolved apatite (phosphate of lime) from Spain, the potash derived from felspar, the ammonia from the gas-works, must exercise the same effects on vegetable life as the bone-earth, the potash, or ammonia, which we provide in manure.

We live in a time when this conclusion is to be subjected to a comprehensive and accurate trial, and if the result corresponds with the expectations which we are entitled to form, if the animal excrements can be replaced by their efficacious elements, a new era of Agriculture must begin.

I invite the enlightened farmers of England to unite with me for that purpose, and to lend me their aid. Whatever may be the result of these experiments, it is necessary for the future prosperity of Agriculture that they should be made. They will enrich us with a number of valuable facts—we shall ascertain where we have wasted efficacious matters in the common course of farming—we shall acquire an exact knowledge of those substances which are necessary and of those which are dispensable.

For a number of years myself and many talented young chemists have been occupied with the analysis of those mineral substances

which are constituent elements of our plants of culture, and with the examination of the excrements of man and animals, as well as of a great number of soils acknowledged as fertile. These labors have been before the scientific world long since, but only a very confined application has been made of them in agriculture.

The farmer is by his position not in the condition to procure and command the efficacious elements necessary for the restoration and increase of the fertility of his fields in a right proportion and suitable form. For this purpose, science and industry must combine their aid.

I have been so fortunate as to remove the difficulties which are opposed to the application of a mere mixture of the elements of manure. If we employ the different elements of manure exactly in those proportions in which they are necessary according to experience, for a rich crop of wheat, peas, turnips, potatoes, &c., and if, at the same time, we leave them in their common state, they do not produce that effect which we might have expected. The cause of this is that the different elements of nature possess a very unequal stability; the ammonia evaporates, the soluble elements are carried off by the rain, and the effect is more in proportion with the amount of those ingredients of the manure which are less soluble.

I have found means to give every soluble ingredient of manure, by its combination with others, any degree of solubility, without altering its effect on vegetation. I give, for instance, the alkalis in such a state as not to be more soluble than gypsum, which, as is well known, acts through many years, even as long as a particle of it remains in the soil.

The mixture of the manures has been adapted to the mean quantity of rain in this country; the manure which is used in summer has a greater degree of solubility than that used in winter. Experience must lead to farther results, and in future the farmer will be able to calculate the amount of produce of his fields, if temperature, want of rain, &c., do not oppose the manures coming fairly into action.

I must, however, observe that the artificial manures in no way alter the mechanical condition of the fields; that they do not render a heavy soil more accessible to air and moisture. For such fields, the porous stable manure will always have its great value; it can be given together with the artificial manure.

Messrs. Muspratt and Co. have undertaken to execute my prescriptions on a large scale, and they are prepared to have ready a quantity of manure in autumn, for wheat, clover, &c., to satisfy the orders of the farmers. One of my former pupils, now Professor of Chem-

istry as applied to arts and manufactures, in this University, is to superintend the fabrication of these different manures. All necessary guarantees are therefore given as regards their composition.

To prepare for the coming autumn a sufficient quantity of manures, it is necessary that the orders be given at the earliest possible time. It would be very expedient in case that different kinds of soil are cultivated in a farm, to acquaint Messrs. Muspratt and Co. with the fact, as the proportions regarding silica are different for clayey and calcareous soils, to which latter, in order to render them fertile for grain, more of an easily dissolving silicate must be added.

All manure which is to be used during next winter contains a quantity of ammonia corresponding with the amount of nitrogen in the grain and crops which are to be grown. Experiments, in which I am at present engaged, will show whether in future times the cost of this manure can be greatly lessened by excluding half or the whole amount of ammonia. I believe that this can be accomplished for many plants, as for clover and all very foliaceous vegetables, and for peas and beans; but my trials are not so far advanced as to prove the fact with certainty.

(Signed) DR. JUSTUS LIEBIG.
Giessen University, 1845.

***TO CURE A GOOD HAM.**—Take twelve hams of common size, eight pounds of brown sugar, crystallized saltpetre half a pound, and five pounds fine Liverpool salt. Rub the hams well with mixture, and lay them in a cask, with the skin down, where they should remain for a week. Then make a brine strong enough to bear an egg, add two or three quarts of ley from hickory ashes, and refine the whole by boiling and skimming. Cover your hams with the brine; let them remain three or four weeks; then hang them up in a smoke house, and smoke well with hickory wood.

WINTER HERBS.—The best time for gathering herbs for winter use is when they are in blossom. If left till they are in seed, the strength goes to the seed. They are best picked from the stalks, dried quickly (but not burnt) before the fire, and rubbed into powder; then bottled.

WASH FOR THE MOUTH.—An excellent wash for the mouth is made of half an ounce of tincture of myrrh and two ounces of Peruvian bark. Keep in a phial for use. A few drops in a glass of water are sufficient.

NUTRITION IN VARIOUS GRAINS.

BY PROF. NORTON.

WHEAT is one of the most important of our crops. The grain contains from fifty to seventy per cent. of starch, from ten to twenty per cent. of gluten, and from three to five per cent. of fatty matter. The proportion of gluten is said to be the largest in the grain of quite warm countries.

It is a singular fact, that in all the seed of wheat and other grains, the principal part of the oil lies near or in the skin, as also does a large portion of the gluten. The bran owes to this much of its nutritive and fattening qualities. Thus in refining our flour to the utmost possible extent, we diminish somewhat its value for food. The phosphates of the ash also lie to a great degree in the skin. The best fine flour contains above seventy pounds of starch to each hundred. The residue of one hundred pounds consists of ten or twelve pounds of gluten, six to eight pounds of sugar and gum, and ten to fourteen pounds of water and a little oil.

Rye flour more nearly resembles wheaten flour in its composition than any other; it has, however, more of certain gummy and sugary substances, which make it tenacious, and also impart a sweetish taste. In baking all grains and roots which have much starch in them, a certain change takes place in their chemical composition. By baking, flour becomes more nutritious, and more easily digestible, because more soluble.

Barley contains rather less starch than wheat, also less sugar and gum. There is little gluten, but a substance somewhat like it, and containing about the same amount of nitrogen.

Oatmeal is little used as food in this country, but it is equal, if not superior in its nutritious qualities, to flour from any of the other grains; superior, I have no doubt, to most of the fine wheaten flour of the northern latitudes. It contains from ten to eighteen per cent. of a body having about the same amount of nitrogen as gluten. Besides this, there is a considerable quantity of sugar and gum, and from five to six per cent. of oil or fatty matter, which may be obtained in the form of a clear, fragrant liquid. Oatmeal, then, has not only abundance of substance containing nitrogen, but is also quite fattening. It is, in short, an excellent food for working animals, and, as has been abundantly proved in Scotland, for working men also.

Buckwheat is less nutritious than the other grains which we have noticed. Its flour has from six to ten per cent. of nitrogenous compounds, about fifty per cent. of starch, and from five to eight of sugar and gum. In speaking of buckwheat or of oats, we of course mean without husks.

Rice was formerly supposed to contain little nitrogen; but recent examinations have shown that there is a considerable portion, some six or eight per cent. of a substance like gluten. The percentage of fatty matter and of sugar is quite small, but that of starch much larger than any grain yet mentioned, being between eighty and ninety per cent., usually about eighty-two.

Indian corn contains about sixty per cent. of starch, nearly the same as oats. The proportion of oil and gum is large, about ten per cent.; this explains the fattening properties of Indian meal, so well known to practical men. There is, besides these, a good portion of sugar. The nitrogenous substances are also considerable in quantity, some twelve to sixteen per cent.

Sweet corn differs from all other varieties, containing only about eighteen per cent. of starch. The amount of sugar is, of course, very large, and the nitrogenous substance amounts to the very large proportion of twenty per

cent.; of gum to thirteen or fourteen; and of oil, to about eleven. This, from the above results, is one of the most nourishing crops grown. If it can be made to yield as much per acre as the harder varieties, it is well worth a trial on a large scale.

THE CORN TRADE OF EUROPE.

By the latest advices from England, we learn that the price of American flour, freight, duty, and all other charges paid, was about 18s. or £4.32 per barrel; and what was the prospect of improvement may be judged by our farmers after a perusal of the annexed report, which we take from the *London Gazette* of Sept. 11. We beg them now to recollect that the market for the products of the earth among the producers of coal, cloth, and iron, increased to the extent of more than a *hundred millions a year* under the tariff of 1842, and that it would have grown by this time to *two hundred millions*; whereas under the operation of the tariff of 1846, instead of increasing another hundred millions it has fallen off fifty millions, and all this great domestic market has been sacrificed with a view to obtain the market described in the following article—a market in which the best wheat, freight and duty paid, will command from 90 cents to a dollar a bushel! How long will it be before our farmers will learn that they are to be enriched by making a market on the land for the products of the land?

The harvest in England may now be considered as finished, for though some quantity of corn still remains out in mountainous and backward districts, the great bulk of the crops has been secured. The splendid weather with which we have been favored since our last, has enabled farmers in Scotland and the north of Ireland to make rapid progress with cutting and carrying, and all apprehension as to the result of the harvest has been set at rest; the tone of the corn trade will, therefore, now be less influenced by atmospheric changes. It is yet, perhaps, somewhat early to speak positively as to the general yield of the United Kingdom, but in respect to the quality of this year's growth of corn there can be no doubt. Wheat especially may be described as extraordinarily fine, and of very heavy weight; the average per bushel will probably range from 63 to 64 lbs., which circumstance is a guarantee as to the excellent condition in which the crop has been saved. Barley is not so universally well spoken of, and the samples will vary materially. Oats have given a good return, more particularly in Ireland, and beans and peas are generally fine in quality, and good in quantity. With regard to the main crop of potatoes, the accounts continue somewhat conflicting, but after a careful consideration of the information which has reached us from different quarters, we are inclined to think that, in the majority of cases in which the leaves and haulm have been attacked, the mischief has not extended to the root. The planting took place earlier this spring than usual, and the plant was well advanced towards maturity before the disorder exhibited itself, to which we are inclined to attribute the comparatively trifling nature of the mischief done. What has since transpired has tended to confirm and strengthen the opinion we ventured to express last week, viz.: that *the total produce of food grown in the British Islands in 1851 will prove larger than has been gathered in any preceding year for several seasons past*. This being our conviction, we naturally anticipate low prices for agricultural produce, as, in addition to an abundance of home-grown grain, considerable supplies from abroad must be calculated on. The free admission of foreign corn will, under the circumstances, be severely felt by our farmers, and we fear that the advantages which they would have derived from so bountiful a harvest will be counteracted by undue foreign competition. In the first instance, the imports

will be principally in the shape of flour from America, but before winter sets in we may reckon on large receipts of wheat from the continent of Europe, and *it would therefore be vain to expect better prices than those now current.* We are, however, disposed to believe that growers will not thresh very freely, the unusually fine quality and excellent condition of this year's produce being strong inducements to hold. Nearly all the new wheat hitherto brought forward at the provincial as well as the metropolitan markets has met a somewhat ready sale, the red at prices varying from 36s. to 38s., and the white at from 40s. to 45s. per quarter. These rates are so moderate that we can scarcely believe that any further decline of importance can take place. At Mark Lane on Monday, there was a good show of wheat by land carriage samples from Essex and Kent, with a few offers from Lincolnshire, Cambridgeshire, and that neighborhood. Nearly the entire supply was of this year's growth, and the millers agreeing to pay previous prices, the stands were cleared at an early hour. Since then the desire to purchase has apparently fallen off, but as there was not much fresh up, either on Wednesday or this morning, factors have refused to make any concession, and the business done has been on former terms. The arrivals from abroad, without being large, have proved amply sufficient to satisfy the demand. We rarely remember so complete a cessation of inquiry for old wheat at this period of the year; hardly any country purchasers visit our market, and the large town millers seem to be in no want of foreign wheat; the transactions have, consequently, been on quite a retail scale throughout the week, and though prices have not been quoted lower, the turn has certainly been in favor of the buyer. The late arrivals have consisted of good qualities from Dantzic, Rostock, &c., but they have met with little attention, and importers will, probably, have to incur landing expenses, or force sales, at even lower terms than those now current. In floating cargoes nothing of the slightest interest has occurred; the last sales reported to have been made of Polish Odessa wheat were at 31s. to 31s. 6d. per quarter, cost, freight, and insurance. The bakers have not much flour on hand, and notwithstanding the depressed state of the wheat trade, the value of the manufactured article has been well supported. This may be partly accounted for by the smallness of the supplies of flour from France for some weeks past, and the diminished competition which our millers have consequently had to contend with. Hitherto little new barley has been threshed, and the quantity brought forward at Mark Lane has been so small this week that sellers have experienced no difficulty in obtaining former prices. Moderately good malting samples have realized 29s. to 30s., and really choice lots 1s. to 2s. per quarter more. The demand for foreign, suitable for grinding, has also been tolerably active; thin light qualities have sold at 22s. to 23s., and heavy samples at 24s. per quarter. In malt, there has not been much passing, and prices have undergone no change requiring notice. The arrivals of oats, coastwise and from Ireland, have been scanty; but we have again to report a large supply from abroad, principally from Archangel. It being, however, the prevailing opinion that the Russian supplies will soon fall off, factors have refrained from pressing sales, and though the trade has been far from lively, former terms have been maintained. The sales made on Monday were at rates precisely similar to those current on that day se'nnight, and neither on Wednesday nor this morning could good corn be bought cheaper than in the beginning of the week. Beans have come rather sparingly to hand, and have not been sold lower than before. Peas have rather crept up in value, but not so much as to render it necessary to alter quotations. We have heard of no sales of Indian corn.

THE VEGETABLE KINGDOM.

BY JOHN B. NEWMAN, M. D.,

[Popular Lecturer on the Institutes of Medicine.]

It was remarked by a philosopher, some years ago, that it was scarcely possible to tell the difference between a dog and a rose. This statement, to the greater number of my readers who have not reflected on the subject, will appear hardly probable. Anecdotes of the sagacity and faithfulness of dogs are known to all; and I doubt not many of them in our cities are possessed of more knowledge and practical information, and are better members of society, than the swarms of idle and vicious youth who crowd the streets. How then, with such facts before him, could Boret make such an assertion? I will tell you. Our ideas of the intelligence of animals are derived from the proofs of design we see them exhibit. Having a certain end in view, they will choose, with the most astonishing discrimination, out of a number of means, the ones best adapted to their purposes, and contrive to use these in such a way as to be almost uniformly successful. Natural history is made up of facts in support of this position. Our next inquiry will be to find out whether plants ever show such instances of choice and foresight; and a little examination will prove that most unquestionably they do.

Strawberries planted on moist grounds give out no runners; but, on placing them in a dry soil with water at some distance, we find runners travelling around until they discover it, and then remaining a living aqueduct to supply the plant. If these runners are moved round to the other side, they will soon regain their original position with unerring certainty. If you turn the under surface of a rose leaf upwards, it will in a little while commence a return movement, gently twisting with a kind of effort on its peduncle, as on a sort of pivot. The Abbé Marten transplanted a rose tree from one part of his garden to another for the purpose of experiment. To the right of the new position, the soil was hard, dry, and sterile; to the left, moist, rich, and tender. The roots at first radiated alike to the right and left. But he soon discovered that the roots which had advanced to the right bent backward toward the fertile and mellow earth, as if divining that their companions at the left had found better pasture. To prevent their intercepting nourishment intended for other plants, he dug a ditch to stop the further advancement of the roots. Arrived at the ditch, they plunged perpendicularly below its bottom, ran around, and advanced anew toward the point whence they had discovered the rich soil. Instances of their foresight in guarding against excessive heat, wind, and rain, are equally numerous. In France, the peasants train the carbine by their doors to serve as a barometer; its open flowers show clear weather, but closed, an abundance of rain. The shepherd's weather-glass has the same property; if it does not show its face to greet the sun on his ascension, the sheep remain in the fold on that day. The "four o'clock" opens its flowers regularly every afternoon at that hour, to show the laborer that if he cannot afford a watch, nature will provide him with the means of knowing the hour without expense. Such examples certainly prove a faculty of judging according to the sense of plants. And now the inquirer asks, what is the nature of this principle, and in what does it differ from chemical affinity or attraction? A perfect exemplification of this difference is given in the history of its creation. "And God made every plant of the field before it was in the earth, and every herb of the field before it grew." Dry land and seas by this

time were divided, and the forces of the inorganic world in full operation. These forces are called the pullers-down of nature. Exposed to their influence, mountain and hill crumble into dust; and it is owing to their agency that volcanoes and earthquakes destroy cities and swallow up nations. This is due probably to the shape of the ultimate atoms, which, fitting into each other in different ways, occasion perpetual change. But on the third day, a controlling influence, a new set of powers, the builders of nature, appear; created in kind and degree different from matter, yet only manifesting their presence to us in connection with it.

So far from allowing these atoms to unite according to their affinities, which would soon destroy nature, they exercise the most despotic sway, controlling them to the last. The chemical forces are in perfect subjection while life remains; but the moment it departs, and dust returns to dust, the work of destruction begins and the body vanishes into air. A beautiful example of this opposition is shown by seeds, which are the simplest independent forms of the union of the life-power with matter. Take two of these, and having destroyed the vitality of one of them by passing an electric spark through it, place both in warm and moist earth. The dead seed, surrounded by all the conditions favorable to its decomposition, is speedily resolved into its native elements, while the living one makes slaves of its enemies, rapidly sprouts up amid the surrounding desolation, and hangs out its flowery banners, as tokens of victory. Seeds retain life almost any length of time. I once noticed an account of an abundant harvest reaped from the growth of seeds found in an Egyptian mummy, over two thousand years old. A seed, finding itself in a warm, moist place, suddenly becomes aware that it has work to do, and sets about it without delay. The seed case bursts, a stalk and leaves appear above, while the root, sending off filaments, remains below. At the end of each of these little filaments is a spongiole, or bundle of leech-like mouths. These suck from the soil whatever they require, and then act the part of a stomach in instantly digesting it. A series of ascending vessels or veins are ready to carry it to the leaves to be further elaborated; when it arrives there its oxygen is given off, and a supply of carbonic acid obtained from the air is combined with it; and the pure blood or sap is carried by the arteries to every part to supply its necessities and form compounds.

Plants are manufacturing establishments: some make the essential oils, as the cinnamon, sassafras and rose; others salts, as the sorrel, oxalic acid; the bark-tree, quinine; and the willow, salax. Many a despised shrub has properties more deadly and dangerous than a powder-magazine; the laurel and peach yield prussic acid, one drop of which will destroy life; and travelers tell us that the atmosphere of the Upas is fatal for miles around it.

The vital principle of each plant being separate and independent in itself, explains the reason why two of them, the one a virulent poison, the other a table vegetable, will grow side by side, and draw their nourishment from the same source. It also shows the error of our modern agriculturists, who treat these living existences endowed with a power of choice and foresight as if they were tubes imbibing whatever was placed near them by capillary attraction.

Man resembles a torch, in requiring oxygen to keep him burning or alive; in return for this he throws out carbonic acid, which is to him a virulent poison. Now what prevents this gas accumulating in the air and destroying the animal kingdom? And from what source shall the supply of oxygen be derived to answer our continual demand? Only from the respiration of plants; which we can now see not only supply us with food, but are absolutely necessary for our daily existence.

When the Custom House and Merchant's Exchange were erecting in New-York, they were the daily resort of thousands who flocked to witness their gradual progress ; yet how much more wonderful is the building of a vegetable palace ! Unseen workmen are urging it forward with untiring industry ; column after column forms ; story after story rises ; staircase and hall and gallery are soon fixed in their positions. We think it a great thing to have the Croton water brought into our houses ; yet in every one of these little chambers, there are pipes to carry food and water and take away the residue. It is made of the finest material, elastic, capable of bending to the breeze, and, to defend it from the rain, covered either with water-proof varnish, or stuccoed over with the rarest porcelain. And all this time the spectator is not disturbed by noise or dust, the greater part of the work being carried on under ground. When all is completed, no monarch on earth could obtain such a residence. The very paint of its walls, though exposed to all kinds of impurity, is of such quality that the king's stateliest robes cannot match it. "Consider the lilies of the field : they toil not, neither do they spin ; yet Solomon in all his glory was not arrayed like one of these." Nay, they are even glad to obtain its essences at second hand, to perfume themselves.

The name of the inhabitant who owns the house is written on a broad door-plate of surpassing beauty, so that we can tell one from another. Books have been written on the language of these door-plates, or flowers, and it is said that angels by their means write mysterious truths on hill and field. The poet from the earliest ages has held the most sweet and loving converse with them. But to the physician, the priest of nature, they speak in a higher and more exalted strain. In them he reads the success of his mission. By their means he can conquer the most obstinate diseases. As nothing has ever been formed for show alone, the truly useful will always be the truly beautiful. When the uses are perfectly understood, the fond dream of the Rosicrucian shall not want verification. The bone shall continue firm and the muscle strong ; the eye of youth retain its lustre ; and as century after century passes away, the lapse of time shall but witness our triumph over the pullers-down of nature, and our increase in wisdom and love. The happy children of Flora, that have retained undimmed the influence of their Creator's smile when first he pronounced his work good in Eden, shall receive added radiance and more dazzling glory, as they again behold His face in the dawning morn of the Millennium.

TEETH SET ON EDGE.—All acid foods, drinks, medicines, and tooth washes and powders, are very injurious to the teeth. If a tooth is put in cider, vinegar, lemon juice, or tartaric acid, in a few hours the enamel will be completely destroyed, so that it can be removed by the finger nail as if it were chalk. Most have experienced what is commonly called teeth set on edge. The explanation of it is, the acid of the fruit that has been eaten has so softened the enamel of the tooth that the least pressure is felt by the exceedingly small nerves which pervade the thin membrane which connects the enamel and the bony part of the tooth. Such an effect cannot be produced without injuring the enamel. True, it will become hard again, when the acid has been removed by the fluids of the mouth, just as an egg shell that has been softened in this way becomes hard again by being put in the water. When the effect of sour fruit on the teeth subsides, they feel as well as ever, but they are not as well. And the oftener it is repeated, the sooner the disastrous consequences are manifested.

ABSURDITIES AND THEIR AUTHORS.

"It is nonsense to say, with the *Evening Journal*, that where we import the value of ten thousand barrels of flour which we have sent abroad, we bring the ten thousand barrels back again. But the defense of the protective system leads people to all manner of absurdities."

Such is the answer that the New-York *Evening Post* offers to what it styles a gastronomic view of the tariff. The *Post* is a witty paper, and relies upon the effect of its humor much more than upon sober argument. But the power of fun depends very much upon whom it is poked at. Let us see then who it is that is responsible for the absurdity of the *Evening Journal*. The first numskull who suggested the idea is a gentleman in a big wig and enormous pair of spectacles, whose bust for many years stood over the door of the *Evening Post* printing office. He was thought to be rather a sensible man in his day, but that was a good while ago. His name was BENJAMIN FRANKLIN. On the fourth day of April, 1769, that absurd old noodle wrote as follows:—

"Manufactures are only another shape into which so much provisions and subsistence are turned as were equal in value to the manufactures produced. This appears from hence, that the manufacturer does not, in fact, obtain from the employer for his labor more than a mere subsistence, including raiment, fuel, and shelter, all of which derive their value from the provisions consumed in procuring them."

In the same paper he says: "The advantage of manufactures is, that under their shape provisions may be more easily carried to a foreign market."

This Benjamin Franklin was in the habit of corresponding with a man in Scotland, who afterwards wrote a book, and made himself quite notorious. The *Evening Post* has a thousand times mentioned him as the person who utterly exploded the absurdities of the protective system. His name was ADAM SMITH, and the title of his book is the "Wealth of Nations." He got from Franklin the absurd notion that manufactures are only food in another shape, and taught it to others in these words:—

"A piece of fine cloth which weighs only eighty pounds, contains in it the price not only of eighty pounds of wool, but sometimes of several thousand weight of corn, the maintenance of the different working people and their immediate employers. The corn, which could with difficulty have been carried abroad in its own shape, is in this manner virtually exported in that of the complete manufacture, and may easily be sent to the remotest corners of the world."

The difference between Adam Smith and those who, like the *Evening Post*, deny his principles, while stealing his name, is, that Smith thinks it best to export what may be "easily sent," while they want our farmers to content themselves with raising what can only "with difficulty be carried abroad."

But when we come down to modern times, we find men who have fallen into the same absurdity, and yet stand high in the esteem of the *Post*, as sound teachers of the philosophy of national wealth. Thus, WILLIAM BROWN, Esq., a free-trade member of the British Parliament from Lancaster, whose strictures on Mr. Meredith's Report the *Evening Post* has highly commended, said in one of his speeches that "Great Britain is the largest grain-exporting country in the world," because she sends abroad her grain "boiled down" (to use the phrase of another free-trade writer) into calico, and broadcloth, and cutlery.

Mr. KETTEL, who edits the *Democratic Review*, and is a regular contributor

of free-trade articles to the *Washington Union* and other papers, is infatuated with the same wild ideas. He says :—

“What a strange absurdity it is to see silk going from China and France, cotton from the Southern United States, wool from Australia, coffee and sugar from Brazil, wheat from New-York, Michigan, Odessa, and Poland, hemp and flax from St. Petersburg, pork and lard from Ohio and Illinois, concentrating in Lancashire, to be returned in goods to the localities whence they came.”

We hope the *Evening Post* will have the grace to apologize to Messrs. Brown and Kettell, for brethren ought not to fall out. As for Benjamin Franklin and Adam Smith, they are dead, but their surviving friends will deem it an ample atonement if the *Evening Post* will not hereafter pretend to be of their company.—*Rochester Democrat*.

URINE AS A FERTILIZER.

“A PRACTICAL FARMER,” in the *Germanatown Telegraph*, says, that the very high degree of value that urine possesses ought to recommend it to every one. Of the fertilizing effects of urine in a putrid or semi-putrid state, experience has supplied us with the most distinct and positive proof. In this condition, the alimentary properties with which it is endowed must all result exclusively from the amount of salts it contains. Besides these, it also contains a considerable amount of organic nitrogenous parts, which, by decomposition, produce the formation of ammonia, which is the source of the “nitrogenous proximate constituents of plants.” The question has been frequently propounded, “whether we are to ascribe the known value of urine as a manure to its nitrogenous constituents, or solely and exclusively to its amount of salts, and, therefore, to its phosphates?” This inquiry may be one of interest to the speculatist and the philosopher, but for the more practical farmer it is enough that the evidences of its fertilizing effects are obvious and incontrovertible. If it will confer fertility upon the soil, and realize the great object of all experimental cultivation—causing “two blades of grass to grow where but one grew before,”—the object of the culturist will be accomplished, and the question as to the origin of its fertilizing energies may be left to the chemist and philosopher to decide.

In the summer of 1842, I applied to twenty hills of Indian corn, when just starting from the soil, one gallon of putrid urine per hill. After the first hoeing another gallon was applied, and after the second a third. This corn was planted on a thin, poor soil, which had been emasculated by long and severe cropping, and had become so far exhausted of humus as not to produce even a fair crop of indigenous weeds. The growth of the corn was rapid and luxuriant. No other stimulus was applied, and two hoeings were all that I allowed. On a patch of cucumbers, melons and squashes, I also applied the same with similar success. One great advantage attending the use of this liquid as a fertilizer is, it does not promote the growth of weeds. Solid excrement, and most, if not all the compounded fertilizers, contain innumerable seeds which take early root, and by gaining so much upon the more tardy cultivated crops, greatly perplex the farmer; but urine is free from this evil. It will, it is true, invigorate equally with the cultivated plants all such spurious productions as may have previously taken root, but its application will never foul the soil, if pure before it is applied. For irrigating grass land, it is probably the most energetic, fructifying and salutary agent known.

In its perfectly fresh state, urine does not act so energetically, and is rather

harmful than otherwise to most species of vegetation. I have applied it in this condition, and have never witnessed any good from it on any crop. Putrefaction is indispensable to give to it those highly fructifying properties which, in this state, it is so well known to possess. Petzholdt, in his "*Agricultural Chemistry*," explains the *rationale* of this, in the following manner:

"Now," says he, "if you consider that during the putrefaction of urine, its nitrogenous compounds, such as urea and uric acid, are transformed into carbonate of ammonia, a volatile substance, which escapes into the air, it will be seen that, unless it is applied before the process has become too far advanced, the principal fertilizing constituents will be lost, for it is to these that its efficacy as a stimulus of vegetable life principally belongs."

When circumstances render it necessary to preserve this liquid for a length of time on hand, before applying it, it is a good plan to mix gypsum with it, to attract and fix this fertilizing but volatile constituent. The urine of cattle should be conducted by a system of spouts or tubes to the manure heap, or to deposits of muck, loam, or some other absorbent substance, which will take it up and retain it, by the assistance of gypsum, or some other "fixer," till wanted for the benefit of the crops. That urine contains a large amount of animal matter, may be proved by the fact, that, of all the solid portions of the human system, there is a complete exhaustion and renewal once in every seven years. That is, to be more definite, the man, woman or child of to-day, has not in his physical structure one particle which constituted his frame seven years ago. The old, worn and abraded particles, as they become useless and detached, are passed from the constantly renovating organism, and are mostly to be found in the urine. These constitute a very fertilizing agent, and to them, principally, are we to refer the surprising results which attend the application of this substance as a manure, or stimulus of vegetable life. As to its effects when used for irrigating grass lands, allow me to present the following extract from an English work:

"From a meadow, which had not been manured, 8,000 lbs. of hay were obtained. The same surface, after irrigation with urine, yielded 11,432 lbs. of hay; that is, 3,432 lbs. more. In this country, equally beneficial results have followed the application, and in one or two instances the increase of product considerably exceeded that above given. To every one, therefore, I say—economize your liquid manures: it is an article far too valuable to be overlooked or lost."

FRUITS OF THE TARIFF OF 1846.

WE see in the last *Clarion Register* a very beautiful commentary on the free-trade tariff of 1846. It is to be found in the advertisement of "John Klingelsmith, Sheriff," and successor of Seth Clover, of no less than *six furnaces*, ALL advertised to be sold at the "court-house in the borough of Clarion, on Monday, the 1st day of September next." We do not know the years in which Seth Clover was sheriff, or how many *he* may have brought to the hammer. We only know that he and his party have brought them all. We know that up to 1842 a good many were in existence; that from 1842 to 1846 a great number of new ones were built, and not one sold by the sheriff; that during this time they went on prospering and to prosper; that from this last date not one new one has been built; and that now, at every term of the County Court, they are advertised for sale by the half-dozen, as property no longer in request or of value sufficient to support themselves or owners.—*Pittsburg American*.

Flour now sells in New-York at less than four dollars a barrel. Chicago spring wheat

sold there but recently at sixty cents a bushel. Why is this? Why is it that prices are gradually settling down to a point lower than any we have seen for many years, and likely to touch a point lower than any we have ever yet seen? If our readers desire an answer to this question, they may, we think, find the true one in the paragraph above given. The rolling-mills of the country are nearly all closed. Furnaces that made in 1847 four hundred thousand tons of iron, worth in the various forms of stoves, axes, nails, railroad iron, &c., &c., *at least forty millions of dollars*, and making a market for that amount of the raw products of the earth, are already closed, and each day adds to the number. Ships, we were told, were more productive than furnaces, or cotton and woollen mills, but from the following paragraph, which we give on high free-trade authority, it would seem that the inducement to expend capital in ships is but little greater than to invest it in mills and furnaces:—

THE SHIP-YARDS.

The present appearance of most of the ship-yards of this city could not fail to arrest the attention of any one who had not visited them since the spring. The large yards located between Stanton and Twelfth streets have now not more than one third of the number of vessels in hand they had at the commencement of the year. Large spaces of ground which were then covered by huge frames of splendid ships, swarming with workmen, like bees clinging round a hive, have now a bare and desolate look. The impetus given to this branch of industry by the demand for vessels for the California business having somewhat subsided, *together with the low rates of freight which have prevailed for some time back*, have caused the falling off in the business of the ship-yards.—*New-York Herald*.

We are gradually closing the mills and furnaces of the Union, and with each step in that direction there is, and must continue to be, a diminished necessity for ships; a truth that will at some time become obvious to those who are yet disciples of British free trade. The Harmony of Interests between Agriculture, Manufactures, and Commerce is so perfect that one cannot profit without profit to all, nor can one of them suffer without injury to all. When will our political economists open their eyes to this great truth? When will our farmers awake to the fact that a great external trade cannot exist without a great internal one, and that the larger the latter the larger *must be* the former? We are now destroying the internal trade in hopes to build up the foreign one, and the result must be failure.

SMOKE-HOUSES.

MANY persons commit great errors in building smoke-houses. To be nice, and be a handsome and respectable appurtenance to a farm, it must, forsooth, be built of brick or stone, with close-fitting doors, and a single aperture for the egress of the smoke. The consequence is, the meat is black and bitter, and might as well have been put in a pickle of pyroligneous acid; having lost all its fine flavor, smelling of soot like a chimney-sweep. The walls are so close and cold, that the smoke condenses and settles on the hams or bacon; and instead of drying, it becomes flabby and ill-colored.

A smoke-house can hardly be too open. It takes longer, to be sure, to perfect the process; but when completed, the meat is dry, of a fine, chestnut color, and a delicate flavor of smoke penetrating the whole mass.

The best houses we have seen are built with a stone wall three feet high, flagged bottom, and a wooden structure built on top of the wall. Common siding is tight enough, or boards endwise, like boarding a barn, is sufficient, with a tight board or shingle roof. The bottom is used for an ash-house, and the smoke fire is built on the ashes. It is safe for both purposes, and will

produce a much finer article for those who have a sweet tooth for that delicious treat—a nice-flavored ham.—*Guernsey Times*.

WHAT IS TO BE DONE WITH THE SURPLUS WHEAT OF THE UNITED STATES?

THE European markets give us no encouragement for shipments to any extent there, and if England should require a few millions of bushels, we have got to compete with several grain-growing governments in that market. Flour in Liverpool, at the latest advices, was twenty shillings, or four dollars and fifty cents.

Let us cipher and see the prospect of Michigan sending any of her surplus there to pay for the immense quantities of English goods we are consuming:

Flour per bbl., at Detroit,	-	-	-	-	-	-	-	-	\$3 81
Wharfage,	-	-	-	-	-	-	-	-	0 03
Freight to Buffalo,	-	-	-	-	-	-	-	-	0 15
Wharfage and cartage to canal,	-	-	-	-	-	-	-	-	0 06
Buffalo to New-York,	-	-	-	-	-	-	-	-	0 75
Wharfage and cartage at New-York,	-	-	-	-	-	-	-	-	0 06
New-York to Liverpool,	-	-	-	-	-	-	-	-	0 40
Commissions, insurances, wharfage, &c., at Liverpool,	-	-	-	-	-	-	-	-	0 50
Total,	-	-	-	-	-	-	-	-	\$5 25
Worth in Liverpool,	-	-	-	-	-	-	-	-	\$4 50

Here is evidence that nobody will go into that business. What, then, is to be done? We know of but one way. We must extend the home market. How can that be accomplished? Let Congress revise the present tariff, protect American industry, raise the duties on foreign manufactures, and save the eighty millions of dollars balance that is actually accruing against us, which goes to a people we do not feed. Then you will see manufacturing establishments of every kind fitting up—those already in operation making additions, and thousands of families who are now growing what they use will become consumers of your breadstuffs. That's the way to get good prices and make every section of the country flourishing.—*Detroit Tribune*.

AMERICAN SCIENCE.

AMERICAN science has already acquired a name that is respected throughout the civilized world. It has given man the four most precious boons he has received for two centuries—the cotton gin, the steamboat, the electric telegraph, and chloroform. No European researches into the laws of winds and storms have been attended with half the success that has marked the labors of Maury, and Espy, and Redfield. Our Nautical Almanac, especially that part of it relating to longitudes, founded upon the tabular formula of Mr. Longstreth, a merchant of Philadelphia, by unequalled exactitude has excited the astonishment of the scientific men of Europe. The new method of recording right ascensions and declinations, discovered by Prof. Mitchel, of Cincinnati, is of the utmost value to astronomical science; its permanent adoption at Greenwich is the best of all testimonials to its worth. Our country indeed need not be ashamed of her position in the scientific world while she is honored with such names as those that adorned the long roll of the Albany meeting last week—Agassiz, Pierce, Henry, Mitchel, Baché, Maury, Olmsted, Hitchcock, Horsford, Hare, Rogers, Loomis, Wilkes, Hall, and scores of others in whose fame every intelligent American will feel a just pride.

Editorial.

RENOVATING LAWNS.

WE have received a communication from a correspondent on this subject, which, however, is simply in general terms, and not sufficiently definite to enable us satisfactorily to answer his query. He desires information in regard to the "best method of renovating lawns," and proposes to turn in sheep on his for that purpose. Now, in order to make such suggestions as would be most conducive to his benefit, it would be necessary to be informed what is its situation; what the nature of the soil; how long the surface has been undisturbed; what has been its former treatment; its size, locality, etc., etc. But without a knowledge of these somewhat important particulars, we will venture a few hints of general application.

In the first place, if the soil is moist clay, or loam, a generous top-dressing of fine stable manure or compost should be employed, and, if necessary, repeated the following season. The month of March would be the best time for doing this. Should the soil be of a light gravelly nature, abounding in silex, either dry or leached wood-ashes applied liberally to the surface would be an excellent fertilizer, and bring forward an abundant and beautiful covering of small white clover, (trefoil,) a most fragrant and delightful production for lawn purposes.

If the soil has become "sod," or "sward-bound," a toothed roller would be of essential service in its renovation. An occasional watering (if not too extensive) from a garden engine, with a solution of guano, would doubtless prove beneficial to lawns which have become sterile. The plan of turning sheep on a lawn may not be a bad one, but great care should be observed that they do not injure the young shoots and tender buds of the shrubbery, which they are sometimes inclined to do; and we should prefer to dispense with their service, unless, by long neglect, coarse wild grasses, running briars, etc., might have made their appearance. In the latter case sheep would be a benefit, as they frequently eat them with avidity when young. A top-dressing of well decomposed muck, on which sheep have been hurdled, is an excellent renovator for lawns having a light, sandy soil.

PORTRAIT AND BIOGRAPHY OF HENRY C. CAREY, Esq.

THE following is an extract from a letter received at this office, containing five new subscribers for *The Plough, the Loom, and the Anvil*, with ten dollars, dated

"CLINTON, MISS., August 25, 1851.

"I would like much for you to send the 'Harmony of Interests' to the first-named gentleman. Four of us are anti-tariff Democrats, and I among them; but I have become convinced, by reading Mr. Carey's 'Harmony of Interests,' that the doctrine contended for by him, to wit, *perfect protection against the pauper labor of England*, is the true doctrine, and its adoption indispensable to our prosperity as an agricultural and a planting community.

"I consider Mr. HENRY C. CAREY as one of the clearest and ablest writers of the day. Upon the subject of protection, his writings are calculated to exert a much greater influence than those of any other man in the nation, Mr. Clay and Mr. Webster not excepted. Mr. Carey has become so interesting a character to many of your subscribers, that a short biography of him would be exceedingly gratifying to them. I have frequently been asked who Mr. Carey was.

"Though not a subscriber, I have been a constant reader of your journal for twelve

months, and intend to be through life. It is to be hoped that Mr. Carey will continue his contributions.

"Yours respectfully, _____."

In accordance with the wish expressed in the foregoing letter, we shall embellish the January number of *The Plough, the Loom, and the Anvil* with a beautifully engraved Portrait, accompanied with a biographical sketch, of Mr. Carey. We are happy to be able to assure the writer, as well as all our readers, that Mr. Carey's contributions will continue to enrich our pages.

PENNSYLVANIA HORTICULTURAL SOCIETY.

THE annual exhibition of this Society commenced on the 17th of September, and closed on the 19th. Taking the exhibition altogether, it was a very good one; much better than could have been expected on account of the very dry season. The floricultural department was not as full or as rich in display as usual, but some of the fruits, particularly the pears and apples, were much more so. The prominent feature of the exhibition was the "*Victoria Regia*," deposited by Caleb Cope, Esq., of Philadelphia. We believe it is the first of the kind brought into this country. It is a species of water-lily, and the leaf when expanded measures six feet in diameter. The flower, when fully blown, measures about twelve inches, and is certainly as curious as it is beautiful. The vegetables were uncommonly fine, and there were a great many of them. On the whole, the display was very good, and the exhibition reflects great credit on the gentlemanly managers.

THE ROCHESTER FAIR.

THE New-York State Agricultural Fair, which was held last month at Rochester, appears to have been one of the most successful they have ever had. The city was completely crowded with strangers, including some of the most distinguished men, and the exhibition, which covered some 29 acres of ground, was highly creditable in every department. This Fair is said to have produced some \$3,000 more receipts than any that have preceded it. The receipts from admission were \$14,000, while the premiums amounted to about \$5,000. The Annual Address was delivered by the Hon. S. A. Douglas, who discussed at much length the importance of Agriculture, and its influence upon the growth of our country, its tendency to develop the mind and body of the people. He noticed the leading crops, such as cotton, tobacco, breadstuffs, sugar, rice, silk, wine, woollen, &c. He alluded also to our mineral resources, and suggested the propriety of establishing a great National Agricultural Society, to collect information from the different States, and diffuse it among the people in an annual report, thus presenting a view of the agricultural condition of our whole country. Judge Douglas' address smacked strongly of free trade; aside from which it was a very interesting and highly finished production.

"COMSTOCKING."—This is a term applied to a system of agriculture, horticulture, fruit-growing, &c. &c., practised by Russell Comstock, Esq., of Mabbettville, Dutchess county, New-York, of which he claims to be the discoverer, and a knowledge of which he imparts in lectures for a remuneration, relying upon the good faith of his auditors not to repeat the information thus given to others. The *Fishkill Standard* says that "the lectures are acknowledged to be of vast importance, and well deserving of a liberal patronage." We know nothing *practically* of Mr. Comstock's system, and do not wish to be understood as speaking of it either approvingly or disparagingly.

RUST IN WHEAT.—A correspondent of the Boston *Cultivator*, speaking of wheat rust, gives the following as the result of his experience: "The rust or mildew on wheat is

caused by a slight drought and a sudden rain, and the sun coming out hot immediately after, without wind, when the wheat-berry is about two thirds full, when it gives the wheat such an impetus, that it splits the stalk of the grain, which causes the sap to ooze out, and finally stops the growth of the berry. After this takes place, any person will notice that the spots on the stalk are all lengthways of the stalk, and by taking a sharp knife, he will find that the stalk is split open. Now the grain must be about two thirds full to have this take place, and at no other stage of its growth. We believe that manuring with new unrotted manure will increase the evil, because it begins to work when the grain needs it the least, in the hot, sultry weather of July and August."

TO KEEP PRESERVES.—Fill your jars to within an inch of the top, and with strong tissue or other paper, or muslin dipped in a solution of gum arabic, isinglass, or the white of an egg, cover the jars, overlapping the edges an inch or more, and pressing the paper or muslin closely over and around the mouth of each. No tying is required, and when dry, the whole will become perfectly smooth and tight, and being impervious to air, will preserve the contents better than many methods less simple.

SPONGE MADE INTO BROADCLOTH.—A Key West letter estimates the value of the sponge, which has been or will be gathered in that vicinity this season, at \$50,000, and says that some French manufacturers are using this article for making their finest broadcloths. It is either mixed with wool or with cotton. At any rate, the cloth made from it is very beautiful; its lustre is unsurpassed by the finest Saxony, and it has the strength of linen.

CORDAGE FROM THE ALOE.—The editor of a St. Augustine paper in a recent number says: "We have been shown a beautiful specimen of a fishing line made from the fibres of the so-called century plant, which abounds here. It has the smoothness and lustre of silk, and great strength, and is well adapted for cordage of every description. The plant is grown upon the poorest soils, and attains an immense size. The subject of introducing its cultivation for cordage is well worth attention."

PERIODICALS, PAMPHLETS, &c.

THE ILLUSTRATED TESTAMENT. By Rev. INGRAM COBBIN.

Any means by which the Divine Word may be rendered more attractive, and at the same time elucidate its meaning, particularly in regard to the young, cannot but be of great importance and benefit to the community. And while we have noticed repeated editions of the Illustrated Bible of Mr. Cobbin, the New Testament, in a cheap octavo form, has, we believe, never before been published in this country. It is intended for Youth and Schools, and is admirably calculated for the designed purpose, being very neatly embellished with numerous wood cuts, together with descriptive and illustrative notes and explanations. The first number has just been issued by Messrs. Mead & Sewell, 123 Fulton street, New-York, and the work will be continued through the series in twelve monthly parts, which will complete it. Price \$1 for the volume, or 10 cents per number.

THE FAMILY CIRCLE AND PARLOR ANNUAL, by J. G. Reed, 140 Fulton street, New-York, has just commenced its twelfth volume, greatly improved in matter and embel-

ishments. The publisher offers a premium of a large and beautiful engraving of WASHINGTON to all subscribers who pay a year in advance. Terms, \$1 per annum.

THE CHRISTIAN PARLOR MAGAZINE, by Geo. Pratt, 116 Nassau street, New-York, ranks high as a literary work, beside the moral influence which pervades all of its pages. It is issued monthly, in the style of the best magazines of the day, and is richly embellished. Price \$2 per annum, in advance.

THE INTERNATIONAL MAGAZINE, by Stringer & Townsend, and HARPER'S MONTHLY, by the distinguished house of Harper & Brothers, both of New-York, are prodigies for cheapness, when we regard the quantity of reading matter which they contain. The character of these works is so well and favorably known, that any commendation from us would seem superfluous.

THE KNICKERBOCKER MAGAZINE, by Samuel Hueston, 139 Nassau street, New-York, is a monthly repository of all that is good-natured and humorous, while it is the oldest and most refined in its literary character of any of its contemporaries. It can date its existence back far enough to be the great grandfather of the numerous "small fry" with which it is surrounded; and we are glad to learn that in its green old age it gives a rich yield to the consumer as well as to him who cultivates its soil.

MISCELLANEOUS SUMMARY.

THE *Pittsburg American* is complaining that the iron trade is very much depressed; half the mills in that city being idle. No wonder, when our Government allows the English to send their iron here and undersell us. . . . THE *Montreal Gazette* mentions that the flag of England was publicly burnt on the public square in that city when news was received that the Queen had signed the Ecclesiastical Titles bill. . . . HE who does not prevent a wrong when it is in his power, is equally criminal with him who commits it, and will be esteemed accordingly. . . . MR. HENRY E. BABCOCK, of Somers, Connecticut, recently killed a hen which was found to contain eleven full-sized eggs. . . . THE coffee crop is immense; never exceeded. A decline of 20 per cent. has taken place in the West Indies. . . . THE amount of contributions to the Washington National Monument during the month of August amounted in the aggregate to \$2,401 31. . . . MACKINAW trout are for sale in Albany. It is the first time they have ever been offered in that market. . . . TEMPERANCE puts wood on the fire, flour in the barrel, meat in the larder, vigor in the body, intelligence in the brain, and happiness in the whole family. . . . MR. HOSEA BARNES, living near Havre de Grace, Md., raised on nearly an acre and a half of ground sixty bushels of wheat, weighing sixty-four pounds to the bushel, on stock ground. . . . THE farm belonging to the late John Ash, lying two miles from Elkton, Md., was recently sold for \$3,355, being \$30 50 per acre. . . . CHERISH the tender buds of pity, and they will bloom with benevolence. . . . M. S. PLUMMER, Esq., of Prince George's county, Md., raised this season 5,300 bushels of wheat. . . . FIVE horses were stolen from Petersville, Frederick county, and its vicinity, a few nights ago. . . . FOURTEEN hogsheds of gooseberries were entered at the Boston Custom-House recently, imported in the ship Hamilton from London. . . . JUDGE LEVI WOODBURY died at Portsmouth, N. H., on the 4th Sept., aged 61 years. . . . A CANADIAN schooner cleared lately from Chicago for St. John's, Newfoundland, with a cargo worth about \$7,200, mostly of corn. . . . ONE of the New-York hotels receives from \$1,000 to \$1,200 per day

above its expenses. . . . To pickle nasturtiums: soak them three days in salt and water, as you collect them, changing it once in three days, and when you have enough, pour off the brine and pour on scalding vinegar. . . . Do not keep pickles in common earthenware, as the glazing contains lead, and combines with the vinegar. . . . A FARMER in Preble county, O., this season raised 63 bushels of flax-seed on 3 acres and 10 rods of ground—being over 22½ bushels to the acre. . . . At the present time upward of \$300,000,000 are invested in the various railways of the United States. . . . In walking, always turn your toes out, and your thoughts inward. The former will prevent you from falling into cellars, the latter from falling into iniquity. . . . The average number of persons ascending Bunker-Hill Monument is stated at 18,000 a year, and 12½ cents admission is charged, giving an annual income of about \$20,000. . . . By the appeal of the shirt sewers of New-York to the public, it appears there are upwards of 6,000 of them, whose average wages are only from \$2 to \$2 50 per week. . . . In the 23,000,000 of the United States population are more persons who habitually read and write than can be found in 150,000,000 in Europe in one area marked off in any shape you please. . . . THE *Cincinnati Inquirer* states that the stock of barrelled pork on hand at present is not more than one fifth the amount on hand last season at the same time of year. . . . VINEGAR for pickling should be sharp, though not the sharpest kind, as it injures the pickles. If you use copper, bell metal, or brass vessels for pickling, never allow the vinegar to cool in them, as it then is poisonous. . . . LEAD ore of a very fine quality has been discovered in Delaware county, N. Y.; it is found at the base of a mountain five hundred feet high, which is said to contain also coal and iron. . . . HUMILITY is a grace that adorns and beautifies every other grace; without it, the most splendid natural and acquired acquisitions lose half their charm. . . . THE *Opelousas* (La.) *Whig* states that some of the hands of Mr. Lutz of that place, while digging on his plantation, found a large quantity of gold coin, amounting to about \$14,000. . . . VALUABLE mineral springs have been discovered at Alligator, Fla. The temperature of the water is sixty-seven degrees Fahrenheit, and is strongly impregnated with sulphur, nitre, and iron. . . . A MASSIVE gold medal, of two hundred dollars value, has been prepared at San Francisco for presentation to the New-England Guards of the city of Boston. . . . DR. ACKLEY, of the Cleveland Medical College, has a wild cat three months old, a fine specimen of the animal, which was caught when a “wee thing,” and brought up under the immediate supervision of a domestic cat. . . . PERSONS who are always cheerful and good-humored are very useful in the world; they maintain peace and happiness, and spread a thankful temper amongst all who live around them. . . . THE receipts for tickets at the Mechanics’ Fair in Providence, R. I., were \$900 the first day and \$1,800 the second. . . . THE best cane seats for chairs are said to be manufactured by prisoners in the New-Jersey State Prison. . . . A most disastrous storm has swept over Lower Georgia, which has proved very destructive to buildings and the crops. . . . PROFESSOR AGASSIZ has been engaged to deliver annually a course of lectures before the Medical School in Charleston, S. C. . . . A WOMAN has been committed for trial in London for going into a jeweller’s shop in Shoreditch and throwing a quantity of white pepper into the eyes of the shopman, while she ran off with a card containing forty-one wedding-rings. . . . At the Philadelphia Journeymen Printers’ Celebration, the following toast was given:—Hoe’s Last Fast Press; the only six-barrelled revolver whose discharges spread enlightenment throughout the army of intellect. . . . THERE are few dinners served in England, even among the aristocracy, that are not timed by a Connecticut clock upon the kitchen shelf. . . . THE citizens of Danvers, Mass., have in contemplation an appropriate celebration of the one hundredth anniversary of the severance of that town from Salem, which event occurred Jan. 29, 1752. . . . THE Susquehanna is so low that boats cannot be had to load for Havre de Grace or Baltimore, not being able to enter a tide-water canal. . . . OUR worst enemies are those

which we carry with us in our hearts. They are the evil passions ; and he who can get the victory over them is the greatest of earthly conquerors. . . . RECENTLY seventy Hungarian exiles, on their way West, were promptly passed over the railroads from Albany to Buffalo free. . . . Of the 106 persons deceased in the city of Providence, R. I., during the month of August, two were widows, three widowers, seven married persons, and ninety-five single. Matrimony in Rhode Island seems to be quite a healthful institution. . . . THE Executive Committee of the Pennsylvania State Agricultural Society have changed the time of holding the agricultural fair to Wednesday Thursday, and Friday, the 29th, 30th, and 31st of October. . . . In Hooksett, N.H. forty rattlesnakes were recently killed by workmen blasting rocks on the line of the Portsmouth and Concord railroad. . . . For the Wilmington and Manchester railroad a purchase of 7,000 tons Welsh iron has been made. . . . DURING the year 1850, there were 53 steamboats lost upon the western waters, and 117 serious accidents occurred, as follows :—33 boats sunk ; 14 burned ; 6 destroyed by explosion ; 64 seriously injured ; over seven hundred persons lost their lives, and property to the amount of \$1,500,000 was sacrificed. . . . THE celebrated Neapolitan astronomer, Signor de Gasparis, has discovered another planet, being the fifth we owe to his successful exertions. . . . THE *New-York Sun* states that the wife of Lopez is in Paris, and that he has a son 18 years of age studying in Switzerland. . . . To pickle tomatoes : as you gather them throw them into cold vinegar ; when you have enough, take them out, and scald some spices tied in a bag in good vinegar, and pour hot over them. . . . A TAILOR of Gotha, Germany, has invented, with the assistance of a chemist, a new process by which clothes are made without sewing, the pieces being joined by a species of glue or paste. . . . SEVERAL fruit trees, inoculated with the poison of the rattlesnake, at Albany, were poisoned by the virus, so that the leaves wilted and died. The trees recovered in time. . . . MERCANTILE credit, like female reputation, is sullied by a breath. . . . POWERS's statue of Eve, which was lost with the Swedish ship Westmoreland, off Cape Palos, on the 3d of May, 1850, has been recovered, and is now in New-York. . . . THE London correspondent of the *Post* states that the great medal on agricultural implements, given only where a new practical principle had been applied successfully in an implement for agricultural purposes, has been conferred upon Mr. McCormick, of Chicago, for his grain reaper. . . . SINCE the triumph of the Yankees in steaming and sailing, Yankee-doodle-doo should be changed, in England, to Yankee-doodle-did. . . . BENJ. HALLOWELL, Esq., has accepted the invitation of the Fairfax (Va.) Agricultural Society to deliver the address at the Annual Exhibition of that Society, on the 15th inst. . . . It is estimated that there are 800 railroad dépôts and stations in New-England. . . . A MAN named Murphy, at Bridgewater, Pa., was given an ounce of oxalic acid, by mistake, for salts, and was a corpse in eight minutes. . . . THE deaths in Washington during August numbered 85, of which 18 were by cholera infantum, 8 consumption, 6 dysentery, 3 still-born ; 48 were under 5 years of age, 15 were colored, and 41 were females and 36 males. . . . STEWART's celebrated "Marble Palace" in New-York has been enlarged, and now fronts 150 feet on Broadway. . . . DR. G. A. GARDINER, accused of fraud against the Government, has voluntarily surrendered himself, and given bail in the sum of \$40,000 for his future appearance. . . . To pickle cauliflower, or brocoli : keep them twenty-four hours in strong brine, and then take them out and heat the brine, and pour it on scalding hot, and let them stand until next day ; drain and throw them into spiced vinegar. . . . It is believed that the crew of the American barque *Coquette* have been murdered by pirates off the coast of Formosa, where the vessel was probably shipwrecked. . . . In the British Museum are nine thick volumes composed entirely of title-pages. . . . To pickle peaches : take ripe but hard peaches, wipe off the down, stick a few cloves into them, and lay them in cold spiced vinegar ; in three months they will be sufficiently pickled, and also retain much of their natural flavor. . . . THE number of arrivals

by trains, vehicles, ferries, vessels, and foot, in a single day in Boston, was 43,080, and the number which left the city during the same time, 43,494; making in all 86,574 arrivals and departures. . . . AN engine named the "Winnebago," built for the Galena and Chicago railroad, is entered to compete in the proposed iron-horse race at Lowell. . . . THE rate of taxation in Gloucester is \$1 23 on \$100; in Rockport, \$1 20; in Lynn, 86 cents; in Chelsea, 84 cents; in New-Bedford, 57 cents. . . . LADY SUFFOLK, a mare of some celebrity on the turf, is offered for sale, to close an estate, and rumor says \$2,500 have been offered for her, but that is only half the sum her owner asks. . . . GOODS acquired by industry prove commonly more lasting than lands by descent. . . . MR. JOHN Q. HEWLETT, residing near Baltimore, raised this season seven hundred and eighty bushels of prime white wheat on a field containing 18 acres, 2 roods, and 6 perches—being a very small fraction under forty-two bushels per acre. . . . THEY are bragging over a pumpkin at Mobile which weighs 116 pounds. We should like to be entombed in a pie made of it, and have to eat our way out. . . . THE entire wheat crop of Indiana last year was 6,457,965 bushels, worth \$1,000,000 corn crop, 51,449,668, valued at \$10,189,933. . . . THE cranberry crop of Minnesota this year will be sufficiently abundant to supply the foreign as well as the home market. . . . THE *Keene News* states that Mr. Elias Lyman of White River, Hartford, Vt., has a calf which on the 28th of May weighed 5,962½ pounds. He was then a little short of four years old. . . . THE New-York and New-Haven Railroad Company, to obviate the annoyance of dust upon their road, have given several miles a top-dressing of oyster shells, and already the grass grows among them quite smartly. . . . THE refinements of luxury in equipage or a table are perhaps not so often the gratifications of fancy as the consequence of an ambition to surpass and eclipse our equals. . . . THE tavern bars in Lancaster, Pa., are to be closed on Sundays hereafter. . . . MRS. S. J. HALE, in an article in *Godey's Book* for August, takes strong ground in favor of the practice of medicine by females. . . . THE *Detroit Tribune* says the Conspiracy Trials have cost every daily paper in that city, for reporters and type-setting, over \$800 each. . . . DUDLEY LEAVITT, the veteran almanac maker, died at Meredith, N. H., on the 20th of Sept., aged 80 years. . . . A body of Norwegians, numbering about 220, passed Albany on the 18th, on their way westward, composed of men, women, and children. . . . To pickle onions: peel and boil them in milk and water ten minutes, drain off the milk and water, and pour scalded spiced vinegar on them. . . . A HORNED toad, the *Burlington* (N. J.) *Gazette* states, was dug up in a potato field near that place a few days ago, about four inches long, including the tail, with a body of considerable fatness, which is covered with innumerable horns. . . . It is only shallow-minded pretenders who either make distinguished origin a matter of personal merit, or obscure origin a matter of personal reproach. . . . It is rumored that the vacancy in the U. S. Associate Judgeship, occasioned by the death of Judge Woodbury, will be filled by Chief Justice Shaw of Massachusetts. . . . It is estimated that eight million pounds of wool have been sent to an Eastern market this season from the State of Ohio. . . . To pickle cherries: keep them in strong brine till they are yellow, then take them out and turn on spiced vinegar, and add a fresh supply of hot spiced vinegar. . . . THE St. John papers state that on the 27th ult. a gale was experienced on the coast of Newfoundland, the like of which has not been known for the last fifty years. . . . JESSE BENJAMIN died at Clayton, Jefferson county, N. Y., on the 6th ult., aged 93. . . . JUDGE BEVERLY TUCKER, Professor of Law at William and Mary College, died at Winchester on the 26th Aug., aged 67 years. . . . THE *Burlington Gazette* states that Budd Holt assures them that he has a cow which produces 14½ pounds of butter per week. . . . On Monday night, Aug. 18, twenty-seven valuable sheep, belonging to Nathaniel Hallock, of Milton, Ulster county, N. Y., were killed by dogs. . . . MESSRS. MORSE & HOUGHTON, of Cleveland, Ohio, have 93 acres in one orchard. They have 6,500 peach trees of the best varieties, 2,000 apple,

400 cherry, 750 quince, and about 7,000 pear, apricot, nectarine plum trees, and grape vines. . . . To PICKLE green peppers: take the seeds out carefully, so as not to mangle them; soak them nine days in salt water, changing it every day, and keep them in a warm place; stuff them with chopped cabbage seasoned with cloves, cinnamon, and mace; put them in cold spiced vinegar. . . . A PARTY on Mount Washington, Tuesday, Sept. 16, found the summit covered with ice, from two to three inches thick, and long icicles hung from the boards that brace the staff. . . . THE Post-Office Department has recently decided that letters to postmasters directing them to forward letters to another Post-office address may go free of postage, being "official business." . . . THE New-York Board of Aldermen have voted to give \$100 a year, for seven years, to the widows and families of police officers Gillespie and Foster, who were killed in doing their duty. . . . To take ink out of linen: take a piece of tallow, melt it, and dip the spotted part of the linen into the melted tallow; the linen may be washed, and the spots will disappear without injuring the linen. . . . At the banquet in Paris recently, a fat ox was roasted whole, in order to gratify the British relish for roast beef. . . . At the Lake of Killarney, in Ireland, there is an echo which plays an excellent *second* to any simple tune played on a bugle. . . . THE farmers in New-England complain bitterly of the want of rain. . . . It is a sign of wisdom to be willing to receive instruction; the most intelligent sometimes stand in need of it. . . . THE block which the city of New-Bedford is to contribute to the Washington Monument is to bear the figure of the sperm whale. . . . In 1849, there were consumed in the city of London, 240,000 bullocks, 1,700,000 sheep, and 28,000 calves, to say nothing of the pigs and poultry, together with game, of which one market alone furnished more than 4,000,000 head. . . . THE prospectus has been issued for a new Irish paper, to be published in Boston, under the title of the *Republican Age*. . . . THERE are three things in the world that know no kind of restraint, and are governed by no laws, but merely by passion and brutality: civil wars, family quarrels, and religious disputes. . . . A MAN was fined \$40 and costs for killing four cat birds at Jamaica, L. I. . . . A SNEER is a poisoned arrow; a rebuke is a surgeon's knife. . . . THERE are about 60 Jewish synagogues in the United States, and about 100,000 Jews. . . . EVERY man magnifies the injuries he has received, and lessens those he has inflicted. . . . THE death of Mrs. Sally B. Gray, sister of the late President Taylor, is announced in the *Louisville Courier*. . . . THE city of Norfolk has agreed to subscribe \$50,000 to the stock of the Gaston and Raleigh railroad, which secures the charter. . . . SURVEYS are now in progress for the construction of a railway between Christiana and Copenhagen, which will have the effect of bringing St. Petersburg three days' journey nearer London. . . . PROFESSOR JOHN WILSON, of the University of Edinburgh, the renowned Christopher North, has received a pension from the Government of £300. . . . HON. DANIEL WEBSTER, on his late White Mountain trip, stayed at Fabyan's over Sunday, and rode to a village, (Fryeburg,) near that place, to attend church, where he kept his first school. . . . A PARTY of about one hundred persons recently sung "Old Hundred" on the summit of Mount Washington. . . . HALIFAX papers state that the herring fishery along the coast of Nova Scotia has been an entire failure. . . . At the head of the list of the Knights of the Legion of Honor, lately created by the President of the French Republic, is a widow by the name of Brulon, who was born in 1771. . . . THE expenses per annum to each person of the population in supporting the President of the United States, by paying his salary, is one ninth of a cent; or four ninths for the term of four years. . . . DEATH once seen at our hearth, leaveth a shadow which abideth there for ever. . . . ACCORDING to the official statistics, the number of visitors to the Crystal Palace from May 1 to August 30, was 4,205,509. The fullest day was July 15; then there were 74,122 persons in the building. . . . In the Hotel des Invalides in Paris there are 3,076 pensioners. Of these 1,450 are between 60 and 80 years of age; 959 are close upon the latter number, 80; and 90 very near their 100th birth-day.

The Plough, the Loom, and the Anvil.

VOL. IV.

NOVEMBER, 1851.

No. 5.

FRAUDS OF THE ADVOCATES OF BRITISH MONOPOLY.

From the Washington Union.

THE tariff clamor at the present moment seems to be more perseveringly kept up than usual; and the strange medleys written by Mr. Carey, of Philadelphia, are widely copied by papers not likely to work for nothing, showing a mysterious and interested agency in promulgating the views of capitalists. It is not, however, a matter of regret that Mr. Carey's articles are put forth as the best protective arguments, because they are so at variance with what every intelligent man knows to be true, that they produce a contrary effect; and as by the friends of protection they are admitted to be the best arguments in its favor, it follows that the system is indefensible. We may allude to only a few of the statements made by Mr. Carey, of which the falsity is not so conspicuous as the majority which the reader detects for himself as he goes along. Mr. Carey endeavors to run a parallel between the situation of affairs now and in 1836; to show that the modification of the tariff of 1842, like that of 1828, has ruined internal industry, induced people to buy and consume on credit, without producing anything to pay with. Thus:

"There was then a steady diminution in the amount of production. *So is it now.*"
 "There was then a steady rise in the price of the first necessities of life, consequent upon diminished production. *So is it now.*"

"There was then a stoppage of the growth of immigration, because of the diminished reward for labor. *So is it now.*"

Thus he proceeds to ring the changes, and his process is apparently to ascertain from old papers what was the state of things then, and to assert the same is the case now, without any regard to the fact. The point principally insisted upon is, that the production of commodities has declined in consequence of want of protection, and, as a consequence, railroads and canals do no business, and prices rise consequent upon diminished production. Now, as to production, we may first take the New-York canals, showing the tons of agricultural productions that arrived at tide-water on the Hudson, *via* the canals, in three periods of four years:—

Tons.		Tariff of 1842. Tons.		Tariff of 1846. Tons.	
1836,	- - 173,000	1843,	- - 346,140	1847,	- - 897,717
1837,	- - 151,468	1844,	- - 378,714	1848,	- - 685,896
1838,	- - 182,142	1845,	- - 447,627	1849,	- - 769,600
1839,	- - 163,785	1846,	- - 628,454	1850,	- - 926,048
Total 4 years, 690,395		1,800,935		3,279,261	

The large receipts of 1846 and 1847 were the consequence of the short crops abroad; but the receipts of the last year of low prices were more than

VOL. IV.—17.

double those of 1845. For the present year (1851) the receipts will be immensely larger than last year. Thus the receipts from the opening of navigation to the close of June have been as follows :—

	1850.	1851.	Increase.
Flour, bbls.,	633,420	1,151,906	518,486
Grain, bush.,	2,598,575	4,774,610	2,176,035
Butter, lbs.,	736,017	950,880	214,863
Lard, “	5,771,446	9,276,910	3,505,464
Bacon, “	7,157,647	9,074,973	1,917,326

Grain and flour have nearly doubled in quantity this year, and the exports from the United States to Great Britain alone have been :—

	Flour, bbls.	Wheat.
1850, - - - - -	321,324	430,329
1851, - - - - -	1,054,731	978,687
Increase, - - - - -	733,407	548,358

With these facts ascertained, what a farce is it for Mr. Carey to assert that “production diminishes,” and that there is not enough to export “in payment for cloth and iron!” But he further insists that the building of roads on credit is accompanied by a diminished trade. Thus, page 679 :—

“Road-makers will then discover that while roads have been doubled in extent, the quantity of commodities to be transported has been reduced to a little more than one half, and that, with diminished immigration and emigration, the passenger business can contribute little towards dividends. * * * * All will then discover that competition has led to *doubling* the roads while *halving* the trade.”

The railroads of New-England, being in the manufacturing districts, are those which are supposed to be most obnoxious to this disastrous influence of low duties. We will therefore take a table of their length, and the number of passengers and tons of freight they have transported :—

MASSACHUSETTS RAILROADS.

	Length, miles.	Passengers, number.	Freight, tons.	Net income, per mile of road.
1846, - - - - -	545	3,990,318	1,329,944	81
1847, - - - - -	691	5,556,576	1,769,332	79
1848, - - - - -	846	7,293,777	1,958,331	85
1849, - - - - -	992	8,742,579	2,167,757	100
1850, - - - - -	1,053	8,856,656	2,219,050	99

The only truth in Mr. Carey's statement is, that the “extent is doubled.” Instead of “*halving*,” the passengers have increased 120 per cent., and the freight or “commodities to be transported” nearly doubled. Where such falsehoods as those of Mr. Carey go before a public who have not the means of testing them, what endless deception arises! It is in the deceptions so propagated that the whole strength of the protective theory exists.

But that which Mr. Carey affects most to deplore is the *decline of immigration* into the country. He remarks thus :—

“The necessary consequence of the diminished reward for labor is that immigration has become stationary, and must diminish as the necessities of life rise in price with the increase of machine-making and diminution of production. From 1843 to 1847 it grew steadily, commencing with 75,000 and ending with 239,742. Every arrival brings with it advices that ‘passengers are comparatively scarce, and considerably lower;’ and thus as our power to produce commodities for export diminishes, there is a diminution, and that necessarily, of the inducement to foreigners to come and live among us, and make a market for our produce. * * * *

“Our import of men is now diminishing, and each successive arrival brings intelligence

of the increased difficulty of filling ships at lower rates, and this difficulty must continue to increase as the price of food shall rise with diminished production, &c.

"It [the tariff of 1846] seeks to sink our people to the level of those of Europe, and it destroys the inducements to Europeans to seek our shores, compelling them to remain slaves when they would become freemen."

As the simplest reply to these fabrications, we may give the official number which left Great Britain alone for the United States in six years:—

1842,	-	-	-	-	-	-	-	-	-	63,852
1846,	-	-	-	-	-	-	-	-	-	82,239
1847,	-	-	-	-	-	-	-	-	-	142,154
1848,	-	-	-	-	-	-	-	-	-	108,283
1849,	-	-	-	-	-	-	-	-	-	219,450
1850,	-	-	-	-	-	-	-	-	-	223,078

Thus, in the last year, *three times* the number came here from the British islands that came in the highest year of the tariff of 1842; and in the present year the number of arrivals at New-York alone has been *one thousand per day*—say, 150,000 since January 1. If immigration is a sign of large remuneration for labor annually, that blessing is indisputable. But what are we to think of Mr. Carey, who writes, and of the *Tribune*, which publishes, such fabrications as those which I have quoted, and which are designed to cheat the public into the adoption of measures of public policy which cannot be supported with truth?

It follows that if every test which Mr. Carey applies as evidence of the ruin of the country is precisely the reverse of the fact, then the country must be in a state of unparalleled prosperity; and this, without much exaggeration, may be assumed to be the case. The country is full of natural wealth, and is possessed of great facilities for reaching market at a moment when the European markets are opening for their reception. The recent accounts of a rapid rise in breadstuffs in France has imparted much activity to shipments here, and a rise in the price of the vast quantities coming down the canals, the Mississippi river, and every avenue of trade, will add probably fifty millions to the payments from the country to the seaboard, and produce an abundance of money, and a demand for goods never before witnessed. The flour, pork, corn, cotton, and gold, with which we can supply the world, are guarantees against any very decided manifestations of ruin for the present. The supply of the precious metals has far less to do with the abundance of money than is generally supposed. It is only one product of industry, when every product has as much purchasing power as gold. The receipt of 100 bbls. of flour in New-York pays a debt for \$400 as effectually as 25 ounces of gold; and when, throughout the whole extent of the country, rail cars and canal boats are seen loaded with freight, pressing forward to supply an increasing demand at home and abroad, no serious fears of an immediate revulsion need be indulged.

We take the above from the *Washington Union*, a journal whose articles we have repeatedly copied, desiring to exhibit to our readers the sort of arguments used by the advocates of the system by aid of which Great Britain seeks to compel the planters and farmers of the world to make all their exchanges in her markets, and thus enable her to retain a monopoly of the manufactures and commerce of the world. On each and every such occasion we have invited our contemporary to publish our replies, pledging ourselves in return to publish his rejoinders; but thus far the invitation has invariably been declined, it being a rule with the advocates of British policy throughout this country not to permit their readers to see more than one side of this great question. In this they are certainly wise, for were the farmers and planters once permitted to understand

the extent to which they are taxed for the maintenance of British fleets and armies, there would be exhibited from one extremity of the Union to the other a determination to throw off the colonial vassalage in which we have to this time been retained, far more universal, as we believe, than that manifested in the days when our forefathers destroyed the British stamps and discharged the cargoes of tea into the harbor of Boston. That that determination does not now exist is due to the fact that so large a portion of the journals of the country are united in the effort to satisfy their agricultural readers that the true way to become rich is to exhaust their land by raising commodities to be consumed at a distance, and then to fly from the land itself, to perform elsewhere the work of exhaustion already so well commenced in most of the older States of the Union. Great, however, is truth, and *it will prevail*. The day cannot, we feel assured, be far distant when the eyes of both farmers and planters will be opened to the fact, that if they would be happy and rich, and if they would desire to see the nation independent and powerful, the road to the accomplishment of these great objects lies through that perfect protection which will enable them to make a market on the land for all the products of the land.

In our last it was clearly shown that there had been a great diminution in the production of cotton cloth—the consumption of cotton wool by all the mills of the Union having diminished, since the tariff of 1846 became fully operative, *no less than one hundred and sixty-four thousand bales*. Production and consumption go hand in hand with each other; and wherever we find a diminution in the power to consume, it is the result of a diminution in the power to produce. The professed object of the tariff of 1846 was that of increasing the power of the people to consume fuel, iron, clothing, and various other protected articles; and if it has only failed to produce that effect, it is evidence that the parties to whom the country is indebted for that measure have not performed the promises they made. If, however, it can be shown that *the consumption of protected articles has greatly diminished, notwithstanding the large growth of population that has since taken place*, the fact may, and must, be received as evidence that the authors of that measure either ignorantly or intentionally deceived the people, and that the best interests of the nation require the restoration of the system under which the productive power of the country so rapidly increased as it did during the existence and under the influence of the tariff of 1842.

The mills of the Union now work up 164,000 bales of cotton less than they did two years since—less by 150,000 bales than they did three years since—and *scarcely more than they did six years since*, when the nation was just recovering from the almost universal ruin inflicted by the compromise tariff. We beg our readers to remark that we say “work up,” and not consume, for the power of consumption among the people diminishes even more rapidly than does the production of cloth among the mills, and the result is, that small as is the production the markets are every where glutted with cloth, and the producers are compelled to seek a market abroad for that which can no longer be consumed at home; and *the necessity for looking to a foreign market for cloth increases as the domestic production of cloth diminishes, because of the diminished power to consume resulting from the diminution in the reward of labor*.

Since our last we have obtained a statement of the export of domestic cottons for the first three quarters of the last fiscal year, and the facts exhibited by it so strikingly illustrate our position in regard to this subject that we cannot refrain from laying them before our readers.

In the fiscal year 1845–6, the country was just beginning to recover, as our readers will recollect, from the destructive effects of the compromise tariff. Back debts and back interests were being paid up, and the power to produce and to consume both cloth and iron was gradually going ahead. The disease had been most serious, and the recovery was necessarily slow, but it was becoming daily more and more evident that the patient was recovering, and every where men were at work building mills and furnaces, and con-

structing machinery for the conversion of wool into cloth, and pig metal into bar iron, and bar iron into nails, axes, ploughs, and all other of the machinery required for increasing the productiveness of human labor. But three years had then elapsed since the passage of the act of 1842, and the first two of these years had been required to bring up the consumption of cloth and of iron to a level with the power of production of the previously existing machinery, and until that should be fully employed there could exist no necessity for creating new mills or new furnaces. Until 1844, there had, therefore, been but little done in the preparation for an increase in the number of spindles and looms, and it is needless to inform our readers that the creation of a mill is not the work of a day, nor even that of a year, particularly after the almost total destruction that had then so recently taken place among the machine shops of the country.

Nevertheless, the consumption of cotton, that had been in 1841-2 only 267,000 bales, attained in 1845-6 the point of 453,000; and of the cloth thus produced, the domestic consumption absorbed the whole except the value of \$3,575,000, or about fifty millions of yards, requiring about sixteen millions and a half of pounds of cotton.

At 450 pounds per bale, the total quantity worked up would be	204,500,000
Deducting the export, - - - - -	16,500,000

The actual consumption of domestic cloth appears to have been	188,000,000
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The import of foreign cottons in that year amounted to \$13,500,000,	
and this at 75 cents per pound* would give—pounds - - -	18,000,000

Total domestic consumption—pounds - - -	<u>206,000,000</u>
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In the fiscal year just closed, the cotton manufactured into cloth throughout the country has been 464,168 bales, which, at 450 pounds per bale, would give—pounds - - -

209,000,000

The export of domestic cloth in the first three quarters of the year was \$4,933,129, and if to this be added one third for the remaining quarter, the total amount would be \$6,305,694, which, at 20 yards to the dollar, as estimated by the *Union*, would give 120,000,000 of yards, or about—pounds - - -

40,000,000

Leaving for domestic consumption - - -

169,000,000

Being *nineteen millions of pounds less than in 1845-6*, when the nation was just recovering from the paralysis of 1841-2, and *when the population was less than at present by more than four millions*.

The import of foreign cottons in the four quarters was \$18,624,497,	
and if to this we now add, as before, one third for the remaining quarter, we obtain as the total import \$24,832,662, which,	
at 75 cents per pound, would give—pounds - - -	33,000,000

Total, - - - - -	<u>202,000,000</u>
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And thus we obtain, as the total consumption of foreign and domestic cottons by *twenty-four millions* of people, under the system called free-trade, a smaller quantity than was consumed by *twenty millions* under the system that looked to bringing the anvil and the loom to take their places by the side of the plough and the harrow.

The tariff of 1842 was repealed. It was repealed that consumption might be increased, and that the people might cease to be taxed; and yet consumption withers under it, proving a steady deterioration in the productive power of the nation and in the condition of the people. Nor is this all. In 1844-5 we were endeavoring to regain our credit by paying off our debts, and a large portion of our exports was required for the discharge of back interest, instead of the purchase of merchandise. Now, the reverse is the case, and almost

* It is scarcely necessary to inform our readers that, of the imported cottons, a large portion of the value consists of labor, and very little of cotton.

every packet carries to Europe hundreds of thousands of dollars of certificates of debt to be applied to the payment for cotton and woollen goods, and yet our total consumption with a population of twenty-four millions is less than it was with one of twenty millions! It is surely time for the planters to study a system that thus destroys the power to furnish a market for their great staple. The price of the whole crop is dependent entirely upon the amount of the surplus for which they require to find a market in England, and yet every measure they adopt tends to increase that surplus and diminish the price.

The *Union* assures its readers that "it is when a people consume more of their products that their prosperity is greater." To this we agree. The power of consumption is the measure of the power of production. Production increased largely under the system of 1842, and production is now rapidly diminishing under that of 1846, as is manifest from the fact that, with an addition of more than four, and probably five, millions of people since the year 1845-6, the consumption of cotton goods is less now than it was then; and as the increase of consumption is the measure of prosperity, it follows that the people of the Union are much less prosperous now than they were then.

If further evidence of this be needed, we may find it in the facts presented on an examination of the iron trade, so prosperous under the tariff of 1842, and so nearly ruined under that of 1846. In reference to this great trade, we now desire to call attention to the unblushing falsehood of the *Union*, exhibited in an assertion contained in the extract from its columns given in our last number, and we do so because the necessity for resorting to such statements may be regarded not only as proof of weakness of the cause, but also of the existence of perfect knowledge among its advocates that it is so weak that it is only by closing their columns to the truth that its further existence can be maintained:—

"The consumption of cotton goods has increased in the United States, probably, to as great an extent as iron, *of which the consumption of the home manufactured article has increased more, perhaps, than any other.*"

It was asserted that the consumption of cotton goods had increased seventy per cent., whereas it is shown to have diminished. The increase in the consumption of "home manufactured" iron is here, as is seen, asserted to be "perhaps" even "more" than that of any other description of article whatsoever. How far this is in accordance with the facts, our readers shall now have the opportunity to determine.

In 1840, the domestic manufacture of iron was variously estimated at from 286,000 to 347,000 tons, and may have been about 320,000 tons. In 1841, the furnaces and bloomeries built were but six in number. In 1842, a large portion were out of blast, and the domestic production had fallen certainly to little more than 200,000 tons, and probably to much less than that quantity. In the five years from 1842 to 1846, there were built, under the "benign influence" of the tariff of 1842, thirty-four furnaces for the consumption of mineral coal, seventy-one furnaces for the consumption of charcoal, and thirty-six bloomeries, making a total of no less than one hundred and forty-one. In the last of those years, the production was estimated by the Secretary of the Treasury, Mr. Walker, at *no less than eight hundred and fifty thousand tons*, showing an increase, under the tariff of 1842, of *considerably more than half a million*.

The railroad excitement of England kept up the price of iron, and prevented the tariff of 1846 from becoming operative in 1847, and there were built that year eight mineral coal furnaces, twelve charcoal furnaces, and eight bloomeries. Since that time there have been built of all kinds but thirty-four, while much more than one hundred have failed or been sold out by the sheriff. Of those that remain in the hands of the same owners, very many are totally silent, and of the others, many are doing but little work.

The capacity of the furnaces of Pennsylvania in 1847 was—tons	-	550,000
The actual make of that year was	-	389,000
That of 1849-50 was	-	198,000

It will be seen that the make of that State was thus nearly one half of that of the whole Union, and that it had diminished about one half. Since the date at which the statement was made, there has been a further great falling off; and we are assured that if a new compilation were now made of the furnaces, bloomeries, &c., in and out of operation, failures, &c., the table for the west of the mountains would show a falling off of *nearly one half* of those whose product is included in the above greatly diminished quantity.

In evidence of this, we now submit the following statement in reference to a single county in Western Pennsylvania:—

PIG IRON IN MERCER COUNTY.				
Furnaces.	Tons capacity.	Tons now making.	Employed hands.	Could employ.
Sharon, - - -	1,800	1,800	60	60
Mineral Ridge, - -	1,200	600	60	100
Harry of the West, - -	1,300	out of blast	00	100
2 furnaces W. Greenwick,	3,500	400	50	240
Hamburg, - - -	2,000	out of blast	00	180
Big Bend, - - -	1,300	850	70	100
Clay, - - -	1,200	out of blast	00	100
Oregon, - - -	1,250	out of blast	00	100
Iron City, - - -	1,400	900	90	120
Mazeppa, - - -	1,200	out of blast	00	100
2 furnaces, C. M. Reed, -	2,500	300	30	200
Blanches, - - -	1,500	out of blast	00	110
Middlesex, - - -	1,500	out of blast	00	120
Springfield, - - -	800	out of blast	00	70
Martha, - - -	1,000	quit business till tariff changed	00	90
Tremont Cosola Iron Co.,	1,500	1,500	120	120
	24,950	6,350	480	1,860

RECAPITULATION.

These furnaces in full blast are capable of producing pig iron in a year—tons - - -	24,950
Under the <i>British</i> tariff they are producing—tons - - -	6,250
Loss of production—tons - - -	18,600
These furnaces in prosperous times give employment to this number of men, - - -	1,860
Under the <i>British</i> tariff they now employ but - - -	480
Number of men thrown wholly out of work by the <i>British</i> tariff at these 18 furnaces, - - -	1,380!

The reduction is here shown to be three fourths, and the same causes that have already closed so many are now at work to close the remainder.

In Eastern Pennsylvania the anthracite furnaces have managed to keep in motion, but the charcoal furnaces, except such as, from the quality of their ores, can produce iron suitable for making car-wheels, are, as we are informed, “*emphatically extinct*.” In New-York, most of the iron works are closed, and such is the case with a large portion of those further east, as well as with those of Ohio and others of the Western States. The result is, that the present manufacture of pig iron and of blooms is estimated at only 400,000 tons; but, to avoid error, we will call it 450,000, which is, we are well assured, far above the truth.

In 1842, there was not, we believe, a ton of railroad iron made in the Union. In 1847, there existed a capacity for producing 100,000 tons, and the number of rolling-mills was rapidly increasing. Since then, most of them have been stopped, and many of them have been sold out by the sheriff. The number of failures, and of sales by the sheriff,

since 1847, amounted, a year since, of furnaces, rolling-mills, &c., to *no less than one hundred and twenty-four*, and by this time they reach probably one hundred and fifty.

What is the condition of the rolling mills in Western Pennsylvania may be seen by the following statement in relation to the city of Pittsburg:—

“There are in Pittsburg and suburbs fourteen rolling and slitting mills, giving employment to over two thousand operatives.

“Of these mills, we have the following report for this day: Cuddy, Jones & Co., idle; A. Miller & Son, idle; Wood & McKnight, idle; Lorenz, Sterling & Co., idle; James Wood & Co., idle; Bailey, Brown & Co., idle. Running full time: *none!* Running half time: Lyon, Shorb & Co.; G. & J. H. Shoenberger; Spang & Co.; Semple, Bissel & Co.; Graff, Lindsay & Co.; Coleman, Hailman & Co.; Lewis Dalzell & Co.; Stewart, Lloyd & Co.

“Men thrown out of employment in Pittsburg by the stoppage of iron mills under the operation of the British tariff of 1846:

FROM THE IDLE MILLS.

A. Miller & Son, - - -	150	Lorenz, Sterling & Co., - -	175
Cuddy, Jones & Co., - -	100	James Wood & Co., - -	150
Wood & McKnight, - - -	150	Bailey, Brown & Co., - -	150

FROM THE MILLS RUNNING HALF TIME.

Lyon, Shorb & Co., - - -	100	Graff, Lindsay & Co., - -	75
G. & J. H. Shoenberger, - -	75	Coleman, Hailman & Co., - -	75
Spang & Co., - - -	75	Stewart, Lloyd & Co., (sup,) -	50
Semple, Bissel & Co., - -	75	Lewis Dalzell & Co., - -	50

Men out of work, - - - - - 1,450.”

[*Pittsburg Journal*.

Such being the facts, we recommend our readers to reperuse the extract furnished them from the letter of the *Union's* correspondent, in which it is stated that the consumption of home-manufactured iron “has increased more, perhaps,” than that of any other article, and then to judge for themselves of the policy in whose defense it is necessary to publish statements so widely different from the truth.

In 1841-2, the year immediately preceding the enactment of the tariff of 1842, the import of pig and of rolled and hammered iron amounted to 1,955,000 cwts., or less than 100,000 tons, and this was a forced quantity, it being well known that the duty would certainly be greatly increased. The *total consumption* of that period, foreign and domestic, must, therefore, have been under 350,000 tons, and was probably under 300,000.

In 1846, the domestic product was 765,000 tons, and in 1847 it was not less than 850,000. In the fiscal-year 1845-6, the import was about 85,000 tons, and in that of 1846-7 about 100,000. The *total consumption* of the first of these years was therefore about 850,000, and that of the year 1846-7 about 950,000.

The domestic production has now fallen to 450,000 tons. Has the difference been made up in the import? If it has not, the result must be to establish the fact that the power to produce commodities with which to purchase iron has diminished under the tariff of 1846. How far that has been the case our readers will judge from the following statement of facts, which we believe to be accurate.

The total quantity imported in the first half of 1849-50 may be stated in round numbers to have been 205,000 tons, and the whole year gave about 360,000. The import in the first half of the last fiscal year, 1850-51, above given, was but about 173,000. That of the second half, into New-York, was 107,000 tons; and if to this we add 40,000 tons for the rest of the Union, we obtain a total of 320,000 tons. It is thus seen that in the last year, in which there was a *very great decrease of home production*, there was also a *great decrease of importation*, although the English manufacturers appear to have

been willing to receive certificates of debt to almost any amount, and sometimes of doubtful character, in exchange for their iron.

Taking the domestic product at 450,000 tons, and adding thereto the import of 320,000 tons, we obtain a total of 770,000 tons to set against a consumption in 1846-7 of 950,000 tons; and thus we establish a *diminution of the power to purchase to the extent of almost twenty per cent.*, although the population has grown more than ten per cent.!

We beg our readers now to remark that in the estimation of the writer upon whose letter we are here commenting, *the true test of the prosperity of a people is to be found in the growth of the power to consume the products of their own labor.* From 1841-2 to 1846-7, the power of the people to consume cotton goods, domestic and imported, grew at least *seventy per cent.* It is now less than it was in 1845-6 in actual amount, notwithstanding the large growth of population. From 1841-2 to 1846-7, the power to consume iron grew from 350,000 to 950,000 tons, having almost trebled. It is now less than 800,000 tons, notwithstanding the great increase of population. Adopting the standard established by the *Union*, we now request our readers to determine for themselves if the prosperity of the people grows now as it grew then, and whether, on the contrary, it is not evident that it is now diminishing—the *power to purchase being in a course of gradual but certain decline.*

We beg them, too, to remark, that in 1845-6 and 1846-7, we paid for all the cloth and iron we used, and were gradually paying off old debts. We now buy cloth and iron on credit, and are daily increasing our debts. Let them examine these facts, and then determine for themselves whether or not we are right in saying that *efficient protection is the only road to perfect freedom of trade.*

If the reader desire now to understand why it is that the consumption of cloth and of iron diminishes, the answer may be found in the fact that we now produce less to give for cloth and iron. The man who cannot produce cloth cannot purchase iron, nor can the man who cannot produce iron purchase cloth. It will be said, however, that our agricultural products must have largely increased during the period that we have been closing up all our furnaces and mills, and compelling all our immense increase of population to go West and there employ themselves in the effort to *increase the surplus for which it is alleged that we need a market*, becoming rivals to the farmer and planter instead of customers; and in proof that such is the case, the *Union* furnishes certain statements in reference to internal trade.

It denies "that the production of commodities has declined in consequence of want of protection." In proof that production has not diminished, it says: "We may first take the New-York Canals, showing the tons of agricultural productions that arrived at tide-water on the Hudson, via the canals, in three periods of four years:—

Tons:		Tariff of 1842. Tons.		Tariff of 1846. Tons.	
1836,	173,000	1843,	346,140	1847,	897,717
1837,	151,468	1844,	378,714	1848,	685,896
1838,	182,142	1845,	447,627	1849,	769,600
1839,	163,785	1846,	628,454	1850,	926,048
Total,	690,395		1,800,935		3,279,261

We invite the reader now to remark that the four years first given are those of *steadily diminishing protection* to the farmer and planter, in their efforts to draw the artisan to their sides, and that so far from an increase in the quantity of commodities sent to market by this rapidly increasing agricultural population, there is a decrease, the last year being less than the first by no less than 10,000 tons, and the average of the whole being exactly the same as the amount of the first year, to wit, 173,000 tons. The power to maintain trade thus diminished in actual quantity with the approach of what was called free trade—or of that which is properly denominated *British monopoly*

trade. The less cloth and iron we made at home the smaller was our power to purchase from abroad—precisely as we now see to be the case.

In the four years from 1843 to 1847 how widely different was the result! In those years we doubled the domestic production of cotton and woollen cloths, and we trebled the production of coal and iron, and yet the growth of agricultural production was great beyond all former precedent, as we propose now to show. Before doing so, however, we shall invite the attention of our readers to the fraudulent arrangement of the facts by means of which the *Union* desires to bolster up the system of 1846. Having selected for the illustration of its views the agricultural produce sent to market, the years are thus divided:

Tariff of 1842.				Tons.	Tariff of 1846				Tons.
1843,	-	-	-	346,140	1847,	-	-	-	897,717
1844,	-	-	-	378,714	1848,	-	-	-	685,896
1845,	-	-	-	447,627	1849,	-	-	-	769,600
1846,	-	-	-	628,454	1850,	-	-	-	926,048

The person who constructed this table of "the agricultural productions which arrive at tide-water," knew perfectly well that the produce *sent to market* in 1847 *was grown* in 1846, under the tariff of 1842, and that the true mode of arranging this table was as follows:—

Revenue Tariff of 1841-2.									
1842,	-	-	-	-	-	-	-	-	293,177
1843,	-	-	-	-	-	-	-	-	346,140
Tariff of 1842.					Tariff of 1846.				
1844,	-	-	-	378,714	1848,	-	-	-	685,896
1845,	-	-	-	447,627	1849,	-	-	-	769,600
1846,	-	-	-	628,454	1850,	-	-	-	926,048
1847,	-	-	-	897,717					

The produce sent in 1843 was grown in 1842, when we built no mills, opened no mines, constructed no furnaces, and made little in the way of cloth or iron; and that of 1847 was grown in 1846, when we had increased to an enormous extent the production of cloth, and coal, and iron. Nevertheless, the quantity of agricultural products sent to market by this one route had increased *no less than one hundred and fifty per cent.*, or about *ten times the growth of population.* Under the tariff of 1846, we find the quantity decreasing considerably until we reach the last year, when it is seen to rise, and the result is that while the average of the three years is but four per cent. more than the average of 1846 and '47, the last year of the one period exceeds the last year of the other by only three per cent., although the growth of population has been ten per cent.; and if we take the growth of those States which use the canals as the channel by which to send their products to market, it must have been at least twenty, if not twenty-five per cent. Under the tariff of 1842, production, as manifested by the trade on the New-York canals, having grown ten times as fast as population, whereas under that of 1846 it has grown only one third as fast as population, it would seem to be clear that protection was the certain, as it is the only means of arriving at a large trade, and greatness of trade may be regarded as conclusive evidence of a tendency to freedom of trade.

We have now to exhibit to our readers another of the modes of arranging tables for the purpose of producing effect, so universally practised by the advocates of *British monopoly*, and particularly by this correspondent of the *Union*.

It is well known to them that there are two great outlets for the trade of the West—the Mississippi and the New-York canals—and that the only mode of determining what is the real progress in the power to produce and the power to trade, is to examine the two together; a process, however, far too honest for either the *Union* or its correspondent, both of whom make it a rule to be as cautious in the selection of facts as they are in

the arrangement of figures. Why it would not suit them to take the two great highways of trade, will be understood on a perusal of the following extract from one of the journals of the day:—

“The permanent Committee appointed to devise means for the construction of a railroad from New-Orleans to Jackson, Miss., have published an address ‘to the people of Louisiana,’ containing the following comparison of the business of New-Orleans for the years 1849 and 1850:—

Year.	Flatboats.	Steamboats.
1849, - - - - -	1,496 - - - - -	2,873
1850, - - - - -	924 - - - - -	2,784
Decrease, - - - - -	572 - - - - -	89
Increase, - - - - -	000 - - - - -	00

NUMBER OF VESSELS.				TONNAGE.					
Year.	American.	Foreign.	Coastwise.	American.	Foreign.	Coastwise.			
1849, ..	697	378	1,558	240,844	42	201,196	10	461,899	62
1850, ..	522	344	1,342	175,167	35	176,344	02	412,126	01
Decrease, ...	175	34	216	65,657	07	34,852	08	49,773	61
Increase, ...	000	00	000	00,000	00	00,000	00	00,000	00

“The comparison of these years,’ say the Committee, ‘must not be considered as an isolated case; but, on the contrary, is too true an *exposé* of the course of trade of the city for several years past.’”

We have here an enormous decrease in the trade of this great outlet from the West, and this we are told “is but too true an *exposé* of the course of things for several years past.” The years here referred to were certainly not those of the tariff of 1842, for the growth of trade during the period of its existence was almost as regular as was that on the New-York canals, as is shown in the following table, in which we place them side by side:—

Value of Produce received at New Orleans.	Quantity received at tide-water by New-York Canals.
1842-3, - - - \$53,782,084	Crop of 1842, - - - 346,140 tons.
1843-4, - - - 60,094,716	“ 1843, - - - 378,714 “
1844-5, - - - 57,166,122	“ 1844, - - - 447,627 “
1845-6, - - - 77,193,464	“ 1845, - - - 628,454 “
1846-7, - - - 90,033,000	“ 1846, - - - 897,717 “

It is clear that these cannot be the years referred to by the Committee. They were those in which manufactures grew rapidly, and consequently those in which agricultural production increased. To find those in which trade decreased, we must turn to those in which we commenced to close our furnaces and mills and mines, and to drive all our annual growth of population to the West, there to engage in the production of food—and doing so, our object is accomplished, as the reader will see by the following comparison of the results of the crops grown in 1846 under protection, with those grown in subsequent years, under the free-trade tariff:—

	Receipts at New-Orleans.	Receipts on the Hudson.
Of crop of 1846, - - -	\$90,033,000 - - -	897,717 tons.
“ 1847, - - -	70,779,000 - - -	685,000 “
“ 1848, - - -	81,889,000 - - -	769,000 “
“ 1849, - - -	96,897,733 - - -	925,000 “

It would seem, therefore, as if the *quantity* of produce sent to market by the two channels from the West to the East had been a trifle greater in the last year than it had been three years before, and that under a system that forces our whole population into agriculture, *twenty-four millions* of people had sent to market as much as *twenty-one millions* had sent under a system that added in four years to the production of cloth and iron to the extent of little short of a hundred and fifty millions of dollars per annum, while doubling the transport of produce from the West to the East.

If, however, we examine the facts more closely, we shall find that the whole increase of *value* in the last year at New-Orleans resulted from the inflation in the price of cotton produced by extraordinary misstatements in reference to the size of the crop. The quantity received was about a million of bales, and the inflation of price was not less than twenty dollars per bale, and it would be quite safe to state it much higher; but taking even this amount we obtain twenty millions of dollars, which, deducted from the value above set down, leaves but seventy-six millions of dollars for the crop of 1850, against ninety millions for that of 1846. And yet during the intervening period, the policy of the country has tended to drive the whole increase of population to the West, there to become producers of food!

That our readers may judge for themselves of the causes of the late and present increase in the trade on the New-York canals, we give them the following comparative view of the trade of the West with New-Orleans:—

Year ending 31st August,	1849.	1850.	1851.
Bacon, packages, - - - - -	84,043	86,612	102,254
Beef, packages - - - - -	70,590	65,271	48,066
Corn, sacks, - - - - -	1,706,312	1,114,897	1,298,932
Cheese, boxes, - - - - -	54,287	62,809	78,891
Flour, barrels, - - - - -	1,013,177	591,986	941,106
Lard, packages, - - - - -	489,847	530,385	267,501
Lead, pigs, - - - - -	508,557	415,400	325,505
Pork, packages, - - - - -	587,421	573,357	288,215
Whiskey, barrels, - - - - -	125,029	117,753	157,741

We have here a great diminution of trade, and that diminution taking place under a system that looked to building up a great trade upon the ruins of all the mills and furnaces of the Union. The object is being accomplished. Two years since, the South and West consumed 110,000 bales of cotton, and fed the people that converted it into cloth, and now they consume but 60,000, and they have far less food to send to market than they had then. We are told that the way to have great trade is to adopt the measures necessary for sustaining the British monopoly of the trade of the world, and for separating the consumer of food from the producer of the food; yet when we come to examine the facts, we find that precisely as the loom and the anvil leave the side of the plough and the harrow, trade diminishes in actual quantity; and therefore it is that the arrivals at New-Orleans from the West, bringing to market the crop of 1848, were less than those which brought to market that of 1847, and those which brought to market that of 1849 were less than those required for that of 1848, the diminution for the single year in the arrivals by the river having been no less than 572 flat-boats and 89 steamers; while the sea-going vessels diminished in number no less than 534, of burthen amounting to 140,000 tons. The true way to destroy trade would seem therefore to lie in the direction of the tariff of 1846.

It is not sufficient, however, to ascertain how much produce the farmer sends to market. To judge of the improvement or deterioration of his condition, we must know how much it is that he obtains for it, for in the words of the *Union*, "it is when a people *consume* more of their products, that their prosperity is greater." To ascertain the power to consume, resulting from the power to produce, the return trade must be taken into consideration, but that is carefully excluded from the columns of this advocate of the maintenance of British power over the trade of the world. Why it is so, may be inferred from an examination of the following figures:—

Going from Tide-Water by the Hudson.

Purchased with the crop of 1835, - - - - -	117,889
Purchased with the crop of 1836, - - - - -	86,484
Purchased with the crop of 1837, - - - - -	117,949
Purchased with the crop of 1838, - - - - -	124,575
Purchased with the crop of 1839, - - - - -	105,960
Purchased with the crop of 1840, - - - - -	132,844
Purchased with the crop of 1841, - - - - -	94,213

In this period there had been an increase of twenty per cent. in the population of the whole country, and a much larger increase in that of the States which used this canal, and yet the merchandise going from tide-water was twenty per cent. less in the last year than in the first one. What was the progress under the tariff of 1842 is here shown:—

Purchased with the crop of 1842, - - - - -	113,686
Purchased with the crop of 1843, - - - - -	135,616
Purchased with the crop of 1844, - - - - -	144,742
Purchased with the crop of 1845, - - - - -	163,125
Purchased with the crop of 1846, - - - - -	215,185

The first period was one in which we were buying goods on credit, and there was then, as now, every reason to believe that, with the decline of credit, the power of purchase would pass away—and such proved to be the case. The second was one in which we were paying off back interest and back debts, and to accomplish that object required very many millions that would otherwise have been applied to the purchase of merchandise for consumption; and yet the quantity sent West in 1846 was almost fifty per cent. greater than that which was purchased by the crops of 1840 and 1841—and the purchases made with the crop of 1846 were more than double those made with the crop of 1841. Trade, therefore, grew steadily with protection, as it had declined under *British* free trade.

If our readers now desire to know why it is that we consume less cloth and iron, we think they may readily find the answer in the fact that the people who need clothing and machinery have less to give in exchange for them. The power of purchase on the part of the agricultural portion of the nation grew with wonderful rapidity from 1843 to 1847, and with it grew their consumption of all the commodities needed for the improvement of their condition. How uniform and regular was the growth of both may be seen from the following comparative view of the quantities of produce received at tide-water, on the Mississippi and Hudson, and the quantities of cotton goods, of coal, and of iron consumed:—

Crops, New-Orleans.	Hudson. Tons.	Bales Cotton consumed.	* Tons Iron consumed.	Tons Coal consumed.
1842, \$53,782,084	346,160	1843, 325,000	320,000	1,867,000
1843, 60,094,716	378,714	1844, 347,000	480,000	1,718,000
1844, 57,166,122	446,627	1845, 389,000	600,000	2,109,000
1845, 77,193,464	628,454	1846, 453,000	800,000	2,499,000
1846, 90,033,000	897,717	1847, 470,000	950,000	3,130,000

We have here a steady and uniform growth of both production and consumption; and those who desire to understand why it is that the power to consume cotton and woollen cloth, iron and manufactures of iron, is now steadily diminishing, may have all their difficulties removed by satisfying themselves that the quantity of merchandise received at tide-water is far less now than it was four years since—the receipts on the Hudson from the crops of 1849 having been scarcely more than were those from the crops of 1846, while those on the Mississippi have experienced a very large reduction. It is clear that when there is less to give in exchange for cloth and iron, less of those commodities can be purchased. Our population grows rapidly, and with its growth there is a steady diminution in the power to purchase and pay for the machinery of production, and for clothing and others of the necessities and comforts of life—and this diminution of power is manifested by a great diminution in the domestic consumption of cotton and sheep's wool, and of iron.

We invite the *Union* to explain why it was that trade was so small in the free-trade times of 1840 and 1841—why it was that it was no greater in 1842 than it had been

* Domestic and foreign.

seven years before—and why it was that the crop of 1845 purchased almost fifty per cent. more than that of 1842.

We proceed now to an examination of the facts concerning immigration, in reference to which we must be brief, having already given to this article of this advocate of British monopoly quite as much space, we think, as our readers will deem him to deserve.

Five years since, Great Britain determined to carry out the doctrine *denounced by Adam Smith, the father of free-trade*, by sacrificing her agriculturists to the Manchester economists,—driving still farther capital and labor from the land, to seek a refuge in the already overgrown towns and cities of England. The proposed object of this measure was that of rendering the United Kingdom a more fitting place for the residence of man, by increasing the facility of obtaining the necessaries and comforts of life; but so far has this new step in the progress of *British free-trade* been from accomplishing that object, that emigration from the “workshop of the world” has grown from 82,000, in 1846, to 223,000, in 1851. This would seem, as we think, to be adverse to the doctrines of this advocate of British monopoly over the trade and commerce of the world.

Why have these people fled? Because with this new step in the adoption of the Manchester system of political economy, it has become daily more and more difficult to obtain supplies of food and clothing, and because the difficulty of obtaining subsistence has increased so rapidly that the United Kingdom has lost since 1846 all the increase of population from 1841 to 1846, except about 600,000! In the five years of what is called free-trade, *the population must have diminished at least two millions*, and it has so diminished because *British free-trade* has brought with it both famine and pestilence.

Where have these people gone? To the British colonies? To the realms in which the British monopoly is in full force? Or to the half-protected American Union? To this question let the following facts make answer:—

	Total Emigration from Great Britain and Ireland.	To the United States.	To British Colonies.
1843,	57,212	28,335	28,877
1844,	70,686	43,660	27,026
1845,	93,501	58,538	34,963
1846,	129,851	82,239	47,612
1847,	258,270	142,154	116,116
1848,	248,089	188,233	59,856
1849,	299,498	219,450	80,048

Out of eight hundred thousand expelled in the last three years, the whole number that has sought the *free-trade* Canada, Australia and India is 256,000, while 550,000 have here sought protection from the British monopoly system. We beg the *Union* to explain this extraordinary fact.

How far the operation of depopulating the United Kingdom, by means of the system denounced by Adam Smith, is now going on, may be judged from the following facts:

In the first four months of the present year the whole immigration into the port of New-York was	-	-	-	-	-	-	-	100,571
In the same period of last year it was	-	-	-	-	-	-	-	79,402
Increase, -	-	-	-	-	-	-	-	21,169
Of these there were of the people of England, Wales, Scotland and Ireland, in 1850,	-	-	-	-	-	-	-	62,286
in 1851,	-	-	-	-	-	-	-	79,953
Increase, -	-	-	-	-	-	-	-	17,667

From this it follows that, notwithstanding the disturbed state of many parts of the continent, the whole increase from that quarter has been but 3,502, while from that portion of the world which desires to teach the world the advantage of adopting *British free-trade*, the increase was no less than 17,667, or *almost thirty per cent.*! It would

seem to be desirable that before England can expect other nations to adopt her system, she should prove its advantage in *attracting* population rather than in *expelling* it.

The total immigration into this country from all quarters in 1842-3 was 75,000, being about the average of the five previous years. It was stationary. From 1842-3 to 1846-7, it grew regularly until it reached, in the latter year, 239,000, and this it did while the continent was tranquil and Great Britain highly prosperous. This year it will probably reach 330,000 or 340,000, and this it does by aid of continental disturbances, the ruin of British agriculture, and the exhaustion and starvation of Ireland. In the four years of the tariff of 1842, it increased more than two hundred per cent. In the four years that have since elapsed, the average increase is probably twenty-five per cent. If the tariff of 1842 was injurious to the laborer, why did immigration grow so rapidly? If that of 1846 is beneficial to him, why is the present growth so slow? How the laborers are benefited may, perhaps, be judged from the following fact, which we take from the journals of the day:—

“The ship *Constitution*, which sailed for Liverpool yesterday, carried out 226 passengers, the most of them returning immigrants, chiefly Irish, who think they can do better in the old country than here.”

Such was not the case in 1845, '6, or '7. Then there was every where a demand for labor, for we then built mills and furnaces, and we opened mines. Then machinery was in demand, as was seen in the consumption of iron. Then labor was largely paid, as was seen in the rapid growth of the consumption of cotton and woollen cloth. Then each man that came was but the precursor of two that were to come in the following year.

Now we build no furnaces or mills, nor do we open mines. Now the consumption of iron decreases. Now the quantity of produce sent to market decreases, and with that decrease there is a diminished consumption of cotton, and diminished demand for labor; and the immigrant returns to impoverished Ireland, thinking that he can “do better in the old country than here.” Such are the effects of the adoption by the Union of the *British* free-trade policy, which looks to separating the loom and the anvil from the plough and the harrow!

The *Union* points its readers to the increase in the exports of flour and grain, and we now invite our readers to study the following Liverpool circular for the purpose of ascertaining what they have gained by closing mills and furnaces that were finding a market for *fifty millions of dollars' worth of the fruits of the earth*, and preventing the building of other mills and other furnaces *that would be now consuming a hundred millions more*:—

EXTRACT FROM BROWN, SHIPLEY & CO.'S CIRCULAR.

“LIVERPOOL, Friday, Sept. 26, 1851.

“The large arrivals of corn and flour prevent any improvement in the market. White corn is quoted at 27s. 6d.; yellow, 26s. 6d. to 27s.; mixed, 25s. 6d. to 26s.; Western Canal flour, 14s. to 18s.; Ohio, 18s.; Philadelphia and Baltimore, 17s. 6d. to 18s. 6d.; white wheat, 4s. 8d. to 5s.”

Western Canal flour, *freight and duty paid*, \$3 36 to \$4 32 per barrel! Philadelphia and Baltimore, from \$4 20 to \$4 44! Need we wonder, when the farmer of Wisconsin insists upon depending upon England for a market, that his wheat sells in New-York at *sixty-one cents a bushel*? How long will he continue to insist on preventing the consumer from coming to take his place by the side of the producer?

NOVEMBER.—WORK TO BE DONE.

BY PROF. JAMES J. MAPES.

FARM.—Lay up manures in compost. Gather leaves from the woods and place them in hog-pens, composts, &c., &c. Recollect that the inorganic constituents of all growth are to be more plentifully found in their leaves than in any other part. If you desire to start hot-beds in the spring, save a large quantity of leaves under cover for that purpose. Do not attempt to winter more stock than you have abundant means of providing for. If young animals are badly fed, they never thrive well afterwards. Should the season remain sufficiently open, ridge clayey soils, and thus let your land be storing up ammonia from the atmosphere for spring use; the frost will thus have an opportunity of destroying many insects, and a dressing of six bushels of refuse salt to the acre on these ridges will do away with one third the usual quantity of weeds, and nine tenths of the insects. Ridged ground will be ready for tillage in early spring.

Cut wood to be burned twelve months hence, and, if practicable, under-drain wet or heavy lands.

ORCHARD AND FRUIT GARDEN.—Read our article in the *Working Farmer* on the cultivation of Isabella and Catawba grapes, (vol. i. p. 12,) and look to fall trimmings, saving of cuttings, &c. Manure fruit trees, spading in thoroughly. Manure strawberries; cover raspberries, as recommended by Mr. Patterson in a former number. Bank around trees to prevent the attack of mice. Cover tender grapes. Remove grape layers from the parent vines. Grafts may be cut, and preserved as formerly directed. Make wire fences, which may be used for trellises.

KITCHEN GARDEN.—Attend to cold frames, and see them properly protected. Do not let your late crops be frozen in the ground. Put away turnips, beets, celery, carrots, &c., &c. Cover spinach, shallots, young onions, out-door lettuce, and cabbage plants with cedar brush, if you have it, and if not, salt hay, flag or straw. Protect cabbages as formerly directed. Dress and cover asparagus beds, salting them freely. Cover rhubarb. Dress globe artichokes as directed under that head. Dig up horse radish and parsnips for winter use, and protect as directed.

Bean poles, pea sticks, &c., should be stowed away in a dry place to prevent their decay.

FLOWER GARDEN.—Take up dahlia roots on dry days; do not shake off the dirt, but remove it by hand, or the tubers will break at their necks. Cut the stems within a few inches of the ground, label them carefully, and put them away in a dry cellar, free from frost or heat beyond 45°; bury the tubers in dry sand, the stems projecting above, and cover the whole with something to prevent the light from *greening* the tubers, and thus lessening their value.—Read Buist's *American Flower Garden Directory*, p. 129 to 132 inclusive. Protect half-hardy out-door plants; barrels with one head well pierced with holes, mats, brush, straw, &c., &c., may each be used according to the height of plants requiring protection, &c., all of which must be removed in early spring.

Cut down weeds, collect stakes, look to glazing frames, &c. Do not water plants while the ground is frozen about the roots.

HOT HOUSE.—Buist says, "the essential points to be attended to in the hot-house during this month are, *fire, air and water*. The former must be

applied according to the weather, observing not to allow the temperature to be under 50° , and it ought not to continue long at that degree, 52° being preferable. The shutters should be on every night when there is any appearance of frost, and taken off early in the morning. Admit air in small portions every day that the sun has any effect and the atmosphere mild, observing that the temperature of the house be above 60° previous to admission. Shut all close early in the afternoon, or when any sudden changes occur.

"In watering, it is important in this department to have the water of the same temperature as the roots of the plants."

A cistern may be so arranged as to be warmed by the flue; and by having another outside, water may be drawn from the two and mixed to a proper temperature. Do not water bulbs too liberally. Succulents may be watered twice per month, unless over the flues, when they may require it oftener.

Remove decaying leaves, and keep the house clean.

GREEN HOUSE.—Air the house as often as practicable and safe, never keeping it entirely closed, even during frosts, if the sun is shining. Water sparingly. In no case leave the house entirely closed for more than thirty-six hours; rather give slight fire heat than to exclude all air.

DAISIES AND THISTLES.

Look out for those daisies. It is of no use now to scold about your predecessor, or about the occupant who preceded him. You may be as careful about your seed as you please, and study the plants you dislike as closely, and mark their seeds as diligently, and instruct your children as faithfully, and urge the importance of this knowledge on your neighbors as continually, and crowd it upon the attention of your school committees with as much industry and untiring perseverance as you please, it will not eradicate the daisies; and while they are with you, use them to the best advantage. The man who uses the choicest grain in such a manner as to produce good returns, is considered deserving of commendation. Much more, then, is he deserving of commendation who changes a curse to a blessing, the beast of fury to a beast of burden, and makes the tares which the evil one has sown for mischief the harbingers of good.

The daisy cannot be killed by mowing, but it can, if cut early, be made into hay of the first quality; and what is deserving of notice, it very rarely, even when cut quite early, sends another stalk up for seed the same season. By cutting early, then, you not only secure the daisy, but you give a better chance to whatever other grass may be intermixed to spread and gain upon the daisy. This, if you have made your ground rich enough to bear other grasses, will do. Another advantage, if cut early, will be found in preserving the seed from being shelled and scattered. If this is done, there will be but little difficulty in destroying the daisy at a subsequent ploughing and tilling. The root is easily destroyed, but the difficulty is in the seed left in the ground; and if the crop is not cut early, a large portion of the seed will shell, and be left to perpetuate the stock. Cut them early; dry them with as little exposure to dew and sun as consistent, especially after they are fully wilted.

Thistles also, if cut while quite green, will make good fodder. Sheep will pick thistles thus cut from hay, especially if the latter grew large and heavy. Thistles also, thus cut, are often destroyed; and as there is no seed to be scattered, the quantity of thistles will always diminish. But if permitted to stand until the woody fibre is developed, you secure all the prickles, and all the seed, and lose all that is valuable.—*Berkshire Culturist*.

MESSRS. BRIARD & FELL'S PATENT WATER-FRESHENING APPARATUS.

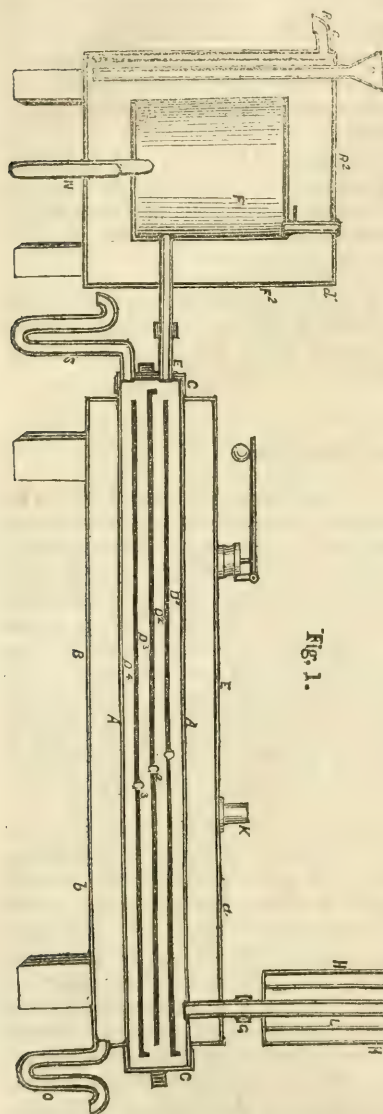


Fig. 1.

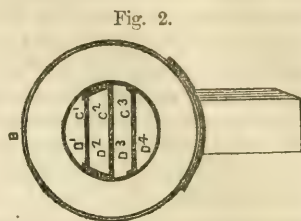


Fig. 2.

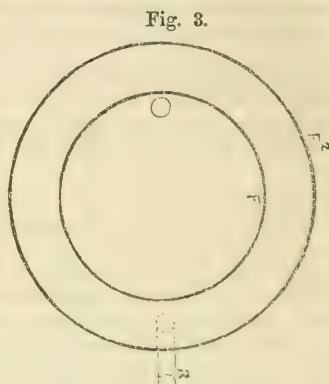


Fig. 3.

A is divided into four compartments or channels, D^1 , D^2 , D^3 , D^4 ; and each of these partitions is turned up at one end, so as to allow the water to flow along them towards the opposite end only. At one end the cylinder A is connected by a pipe E, with a condensing and aerating vessel F, which is contained within a closed tank F^2 . At the other end of the cylinder A communicates by a pipe G with a box H, into which the water to be purified is first introduced from some source of supply connected with the tap I. K is a

This invention has for its object the obtaining of fresh and pure water from salt water, and water containing mineral substances in solution, or containing other impurities which render it unfit for culinary or manufacturing purposes. The apparatus which is employed for this purpose is represented in the annexed engravings, of which Fig. 1 is a longitudinal vertical section, Fig. 2 a cross section on the line a b of Fig. 1, and Fig. 3. a horizontal section on the line c d. A is a cylinder, which is surrounded by, or encased in, a steam jacket B; C C are caps or covers to the cylinder. C^1 , C^2 , C^3 , are a set of partitions, by which

pipe, by which the steam from some steam-generator is admitted into the steam jacket *B*, so as to heat the cylinder *A*. (For steam, hot air may be substituted.)

While steam is thus being supplied to the steam jacket, the water to be operated upon (whether salt or other impure water) is allowed to flow from the tap *i* into the box *H*, and down the pipe *G* into the cylinder *A*, where it falls upon the upper surface of the plate *c*¹; but to prevent any of the water returning in a state of vapor through the pipe *G*, the upper end of that pipe is sealed by a hood *L*, by which free communication from the interior of the cylinder *A* with the external atmosphere is entirely cut off in that direction. The water which falls upon the plate *c*¹, after running along the channel *d*¹, falls down upon the next plate *c*², by which it is conveyed back again to the other end of the chamber, where it falls upon the plate *c*³, along which it flows in a similar manner till it falls into the compartment *d*⁴. While the water is thus conveyed successively from one end of the chamber to the other, it gets heated, and a portion becomes vaporized, and goes off by the pipe *K*, into the condenser *F*, where it gets mixed with the atmospheric air admitted by the pipe *M*, and is finally condensed by coming in contact with the sides of the condenser, when it is run off by the inverted syphon-pipe *N* and collected for use. *O* is another inverted syphon from which the condensed steam which has been employed in heating the cylinder *A* is collected. The water obtained from this pipe, not being aerated, may be employed for washing. *P* is a pipe for supplying cold water to the condenser, and *R* another pipe by which the water as it gets heated escapes. *S* is an inverted syphon, by which the residuum of the impure or salt water operated upon escapes from the cylinder *A*.

This is an English invention, which was patented last August by the inventors, and is considered one of considerable utility.

AGRICULTURE OF NOTTINGHAMSHIRE, ENGLAND.

[Continued from p. 209.]

LIMESTONE DISTRICT.

THE Western Division includes a district of limestone soil forming a narrow slip of land adjoining the county of Derby, to which it more properly belongs from the greater resemblance it bears to the soil of that county. It is described by Mr. Lowe as a "hungry limestone;" and although some parts of it have been much improved by drainage and by the use of bone-manure, it is still wanting in that natural productiveness which distinguishes some limestone soils. The limestone contains a large amount of magnesia, which is alone sufficient to account for the want of natural fertility.

The course of cropping on the dry and sound parts is :

- 1st year, turnips.
- 2d year, barley.
- 3d year, clover or peas.
- 4th year, wheat.

Sometimes oats are sown after the wheat, but this is a practice which is decidedly objected to by the best farmers of the district. This dry and sound land may be cultivated with a prospect of remuneration to the occupier, which can scarcely be said of the wet and cold parts still requiring drainage. On these soils, instead of the turnip crop, the farmer must have a naked fallow for wheat or barley, which is succeeded by clover in the third year, and afterwards ploughed up for wheat or oats.

Where drainage is wanting, it is a precarious district to farm, and one but

little sought after; neither can the tenant be expected to improve materially a soil lying under such natural disadvantages, unless the landlord comes forward to his aid by giving drain-tiles, and otherwise assisting him. Some landlords have shown themselves willing to do so, on the tenant being at the expense of laying them; in other instances the whole expense is incurred by the landlord, he charging the tenant a reasonable percentage on the capital expended.

THE SOUTH-EASTERN, OR CLAY DISTRICT.

Mr. Lowe has divided this district into—"1st, the clays north of the Trent, consisting of the North and South Clay Divisions, (of the hundred of Bassetlaw,) and part of the hundred of Thurgarton; 2dly, those south of the Trent, comprehending the Vale of Belvoir and the Notts Wolds."

In speaking of the clays north of the Trent, he says, "I must observe that the clays north of the Trent are in general not of so tenacious a nature as in many counties, being much more friable from containing a portion of sand, and falling more readily by the weather; particularly the red clay, of which there is a great deal in the country round Tuxford and in the hundred of Thurgarton, which might be more properly called a clayey loam, and a blackish clay soil commonly called a woodland soil, in which there is plainly a mixture of sand."

Mr. Lowe then remarks, "There is a great intermixture of open fields and inclosed townships;" and he shows in his Appendix, that north of the Trent, at the time he wrote, the proportion of townships was as 31 uninclosed to 21 inclosed; of the 31 then uninclosed, there are now not more than 3 or 4 open, and these will doubtless, by inclosure, soon be assimilated to the rest.

Of the mode of cultivation then adopted, Mr. Lowe remarks: "In the open field the common course of husbandry is:

- 1st. Fallow.
- 2d. Wheat or barley.
- 3d. Beans, peas, or both mixed.

The latter crop is very common in this county; the reason given for it is its smothering the weeds; but I have always observed the crops to be very foul."

It is almost unnecessary to state that since inclosures have become general, which has been effected gradually, the above limited and imperfect course of cropping has been abandoned for one more extended—one which, at the same time that it gives greater change to the soil, secures also to the occupier a more reasonable prospect of farming with advantage to himself.

The system of cropping in the clays, now more generally adopted than any other, is the following:

- 1st year, fallow.
- 2d year, barley or wheat.
- 3d year, red clover or grass-seeds.
- 4th year, wheat.
- 5th year, beans.
- 6th year, wheat, or occasionally oats.

So many, however, are the modes of different individuals in this district, arising from the various sizes of their farms, the different character of the soils upon them, not less than through the variety of condition in which they are at the present day from some having been drained and others still wanting that necessary preliminary to good farming on the generality of strong soils, with many other differences, that it is impossible to point out any one particu-

lar system of which it may be said, at least in the northern part of the county, "this is the general practice." To omit altogether the *modus operandi* of the farming in this district would be to leave imperfect an attempt to communicate all necessary information; it is however proposed to treat of mere operations more briefly than has been done in the foregoing part of this Essay. Besides, as many of the details there alluded to are the same in practice throughout the county, irrespective of the character of the soil, it will be less incumbent on us to repeat them.

The ploughing of some of the heavy orders on the strong soils is still performed by *single* ploughs; by which it is to be understood that the horses walk in a line down the furrow, the team mostly consisting of three or four horses, which require a driver in addition to the ploughman. It is more than doubtful whether in all cases these soils, in their present defective state of drainage, could be sufficiently deep ploughed by two horses abreast. One thing, however, is clear, that where four horses are necessary they would act far more advantageously, as regards draught, by harnessing them in pairs abreast. We are aware that it will be answered, that, by so doing, the land would suffer more from the treading of the horses; but we still think that, in many cases, a great advantage would be gained from the horses being nearer to their work. The lighter orders are now more frequently ploughed by two horses abreast, attached to a common swing-plough, for the wheel-plough is but little used in this county, except perhaps on the borders of Leicestershire.

First year, Fallows.—As this operation extends over at least nine months of the year, inclusive of the summer season, when by simply exposing the roots of weeds to the sun they are destroyed, it is in most cases a mere succession of ploughings, consisting usually of five. Where the land is liable to the growth of quitch-grass, the working it with light and heavy harrows is of little service; it requires the more effectual operation of being forked.

Second year, Barley or Wheat.—Although wheat is more commonly sown on the fallows than barley, we think the practice objectionable, and shall state our reasons for holding an opinion so directly opposed to the custom of the district. Wheat after fallows is seldom a yielding crop; it is too frequently *lodged* before it is shot fully into ear, and in consequence is more productive of straw than corn. It is, moreover, questionable whether, by the application of farm-yard manure to the fallows, the evil is not increased, as, by so doing, the nutriment of young plants is supplied in quantity greater than necessary, and by such means an exuberant growth is fostered in the early stages of the plant without the soil possessing in itself, or having supplied to it, those properties which might serve as a counter-check.

Mr. Topham, in his "Chemistry made Easy," has well illustrated this where he observes, "that if wheat be sown upon a soil composed in a great measure of decayed vegetation, the plant will flourish in a most extraordinary manner for a period, and by its luxuriant appearance promise the farmer an abundant return in harvest; and could it but fortunately sustain the exuberance of its germination, no doubt the produce would be equal to his fondest anticipations. But to insure this most desirable result, it is necessary that the stalk should be encased in a cylinder of flint; and if sand is not present, and an alkali to aid in its solution, the plant will bend and fall under the load which its well-gorged organs shall have accumulated, and the cultivator be disappointed of the rich remuneration it promised him." Such is the opinion of a gentleman who has sought to serve agriculture *scientifically*; let us now turn to one who has done so *practically*, for upwards of thirty years, by cultivating extensively strong soils; and, after so long an experience, has published, for the benefit of

others, the results. We allude to an "Essay on the Rotation of Crops best suited to Heavy Lands," published in 1842, by Mr. Richard Parkinson, of Knapthorpe, near Newark. This pamphlet, from its thoroughly practical character, is eminently calculated to serve the purpose for which it was written. On the subject before us the author says: "Wheat should not be sown after summer fallows on inclosed clay-lands; I have found that it is impossible to keep the land in condition and in a profitable course under that system. If the trade in barley was much depressed, and prices low, I would substitute oats occasionally after fallows." We shall leave the reader to draw his own conclusions, whether it may not be highly probable—the results of science and practice being the same—that the cases may be analogous throughout, and traced up to one cause: if so, it will go far to establish the principle we have laid down.

As the practice of sowing wheat upon fallows is very general in the north and south clays, and failure and disappointment in point of yield often attend it, we have been induced thus to allude to the subject in the hope of leading those more immediately interested to trace the effect up to the true cause, and to apply or not a remedy as they may deem it better or worse than the disease.

When wheat is sown upon fallows, 9 pecks to the acre is sufficient, if drilled; but if sown by the hand, 1 or 2 pecks in addition may be necessary. If barley is substituted, twelve pecks will be found enough when drilled, although 14 are oftener sown by hand.

Third year, Clover.—For the respective quantities of seed-clover necessary, red or white, *vide supra*. The red clover will be liable to fail if sown oftener than every alternate course, or once in twelve or thirteen years, according as the white clover remains down one or two years.

Red clover is mostly mown for fodder for the horses, and the after-crop is used for soiling them during the summer and autumn, or allowed to remain for seed, in which case it ought to be mown the first time as early as practicable, so as to allow the seed crop an opportunity to ripen early. The Italian ryegrass is grown by some with great success in this district, and forms, in case of failure of the red clover crop, a most valuable substitute, from the abundant produce it generally yields.

Fourth year, Wheat.—The practice of ploughing and pressing the clover-ley for wheat is common in the loams of the southern part of the county, where it succeeds well; but on the strong soils, where wheat is intended to be sown after grass-seeds, it will amply repay the extra trouble of breaking up the ley during the summer, or as early in the autumn as it can be done, working it to a fine mould, and afterwards ploughing and drilling in the wheat.

The roots of the wheat-plant can thus extend themselves more freely in the more permeable soil, and the slugs and snails being thereby brought to the surface, and becoming a prey to the various birds whose habits lead them to feed upon them, are prevented from doing the serious injury during the winter which they so often effect. Mr. Parkinson, in the Essay to which we have alluded, recommends shallow drilling or sowing by the hand on the common furrow, so as to keep the seed near the surface, as the best preservative against the ravages of the slug or snail.

The wheat, after being hoed in the month of April, is gone over by women, at wages from 9d. to 10d. a-day, who take out any weeds which may remain after the hoeing.

The harvesting of the crop is performed similarly to that of the sand district, as already described, the scythe having almost entirely superseded the sickle.

Fifth year, Beans.—No crop cultivated in this country offers so great a difference as regards value at the time of harvest as this does. Those who still persist in sowing, every third year, beans and peas without the aid of manure, and then leave them to their fate, without either hoeing or cleaning, till they are reaped, receive back in many instances little more than seed again. But such have been the frequent failures in this crop on the clays, that other crops, such as peas or winter tares, have been of late substituted; and, by affording a change to the land, have also been more remunerative to the grower. The most common practice is to dibble about 3 bushels of beans an acre on a common furrow, which has been exposed to the frosts previously. With this method the hand-hoe only can be made use of; but we think a superior mode is that recommended by Mr. Parkinson, which we cannot do better than give in his own words:—"The land is ploughed into ridges 20 inches apart, in November or December, in the same manner as for turnips, being previously manured with seven or eight two-horse cart-loads per acre. The beans are sown as early in the spring as the land is dry enough, in the following manner: A single-horse plough opens a level furrow in the frosted mould of the hollows between each ridge; this is followed by a man with a drill-barrow, which deposits about 3 bushels of seed per acre. The harrows are then taken two or three times over the land, and once across. It may be necessary in some seasons to go over the land once with a powerful harrow after the beans are sown, to break up the middle of the ridges. The land by this mode is left remarkably light, and in fine order for hoeing in the spring and summer. It retains its lightness in a considerable degree until the autumn, which much facilitates the putting in the ensuing crop of wheat, especially in dry weather. The beans are hoed by hand when about 2 inches high, and the land afterwards receives one deep order with the horse-hoe; another hoeing by hand, at least, is always necessary during the summer to cut up the charlock and thistles."

Mr. Watson, of Walkeringham, has grown beans with great success, by opening drills in a similar manner, but at a greater distance—even as wide as 36 inches between the drills; but that is on a deep loam of very good soil at Beckingham, where he has grown upwards of 60 bushels an acre. We have heard him express an opinion that a frequent cause of failure in this crop arises from sowing too much seed, and thereby preventing the free access of sun and air to the plants, which is necessary to their successful growth and after-productiveness. During the last two years he has, previously to the last hoeing which the beans received, sown about 2 lbs. of white turnip seed to the acre, which by the hoeing receives a cover, and thus two crops are growing on the same ground simultaneously until the beans are reaped. This double crop has so far proved satisfactory, and the practice will no doubt obtain notice from others in the neighborhood. The land upon which the experiment has been made is a strong but deep clay, in high condition; and has been furrow-drained and subsoil-ploughed. The Uley cultivator can now be used on the farm to great advantage in the driest season, in preparing the stubbles for wheat; when, perhaps, some of the adjoining occupiers are obliged to content themselves with remaining patient spectators.

Sixth year, Wheat.—The usual preparation for this crop is to plough the land with a thin furrow as soon after the removal of the beans as it can be done. The harrows are then put upon the land, and it is worked to a fine mould; it is then allowed to lie some time to encourage the growth of weeds, so that they may be destroyed by the following ploughing, which forms the seed-furrow, on which the seed is sown by the hand, or upon which it is drilled.

Where the cultivator can be used in the first instance, one ploughing is sufficient. The quantity of seed sown upon bean-stubbles is 10 or 11 pecks an acre. In other respects, the crop is managed as described under the head of wheat in the fourth year.

It has been observed that oats are occasionally substituted in this year for wheat; the low price of horse-corn has, however, of late years made the practice comparatively rare.

Instead of the six years' course described here, some prefer (particularly in the north clays) a four years' course, viz.:

- 1st year, fallows.
- 2d year, barley or wheat.
- 3d year, clover.
- 4th year, wheat.

To which the foregoing remarks made on the four first years of the six years' course apply. When this course is adopted, the clover in the third year is exchanged in every alternate course for beans, beans and peas, or sometimes vetches.

It is almost superfluous to observe that the advantage proposed in this shorter course arises from the fallows recurring oftener, so that the land is easier kept clean.

The farms throughout the county are held in general by tenants-at-will; and we are not aware of any desire amongst the occupiers, as a class, to exchange such tenures for leases.

Our reason for offering this opinion is, that confidence so generally exists between landlord and tenant, and especially so between the large landowners and their tenantry, in whose hands the principal part of the land in the county is, as to make the tenantry satisfied with the matter as it stands; for as, on the one hand, they may be exposed to a disadvantage through the caprice of their landlord, so, on the other, they cannot but be aware that, in these changeful times, when prices are constantly lowering, they have an advantage in being able to relinquish their farms at their own discretion. This advantage would, in our opinion, be strengthened by the more general adoption of a practice which now prevails in but very few instances—viz., that of the corn-rent.

The size of the farms is on the average much smaller in the clay district than in the sands, which is a great disadvantage, as we conceive, and one calculated to operate against an improved cultivation. The most common size is from 70 to 150 acres, containing in most cases a portion of permanent grass-land, which, it may be easily perceived, tends to prevent the occupiers of such farms from pasturing much of the arable land with sheep, as might be done if the farms were larger. They are driven of necessity, in order to make their rent and provide subsistence for a family, to keep an undue proportion of their land in corn, which has the effect of impoverishing their farms, not less than themselves. Household and many other expenses, moreover, press more heavily, in comparison, on small than on large farms. In making these remarks, we would by no means be understood to argue in favor of farms of such magnitude as are held in some counties: at the same time, we are convinced by observation, that the instances are few where men, as capitalists, succeed on farms of less than 300 acres; and few farm really well more than 500 acres: but where capital is plentiful, farms of about the latter size seem most desirable; and this we know to be the opinion of such occupiers as are

of considerable intelligence, in counties where the largest farms are frequently held.

On the subject of drainage, which will in this district demand attention, Mr. Lowe, in his report, is very brief; neither, perhaps, ought we to feel surprise when we consider that half a century has elapsed since he wrote. It is not a subject, we presume, on which he would at that time have much opportunity of giving information. Of draining by tiles he makes no mention whatever. Of late years efforts have been made in this way by individuals which have been attended with the most complete success, which it is our intention to describe. In many instances, however, the work has been performed by those who did not understand the first principles of the art, and who have in consequence failed to give satisfaction to their employers, the work when done being found incomplete.

We allude in particular to various attempts that have been made to overstrain Elkington's principle of deep-draining, the object of which was more especially the interception of spring-water and the conveying it away before it had occasioned injury to the land lying below. To effect by the same means the removal of surface-water is where those individuals have erred: the latter can only be done where the evil is in a soil of an adhesive nature, by making a sufficient number of surface-drains in addition to deep drains for the removal of the spring-water. We will exemplify, by reference to an individual case, what we consider the only efficient means of draining strong land, and which we do with the greater confidence from our knowledge of the results having proved highly satisfactory. The instance we allude to is upon the farm of Mr. Parkinson, of Leyfields, where may be seen the principles of drainage carried out to the greatest perfection. As it is a subject of paramount importance, we shall attempt in a few words to show what his system has been, at the same time remarking on other improvements which have been gone into there. About a year and a half ago we were much gratified by an inspection of every part of the farm, and the conclusion we then came to was, that taking into consideration the difficulties that have been overcome, and the success which has been attained, it offered the highest example of first-rate farming we had ever seen,—an opinion which remains to the present time unchanged.

The soil varies from a heavy sand to a strong loam, the whole lying on a substratum of cold clay. The spring-water has been drawn off by deep drains, some of which are not less than fifteen feet in depth, and are in most cases independent of the surface drains. These deep drains are made subservient to furnishing water for the use of the stock upon the whole farm, by conveying it into troughs, all neatly paved around and kept perfectly clean. The drains are formed of large tiles, and overlaid with stones when needful. Those for taking away the surface-water are laid about twenty-four inches deep, in some places more, and are formed of smaller tiles laid on flat bottoms, where necessary, at distances from eighteen to twenty-four feet apart. The old ridges where requisite are still slightly preserved, the drains in such case being laid down the furrows; otherwise the drains run parallel with the fences.

The fences deserve especial notice. They are of hawthorn, and nearly the whole of them have been replanted by Mr. Parkinson, and have grown up under his eye. They are of splendid growth, and form an invaluable shelter to his short-horn beasts, being allowed to rise for that purpose on the grass-land. When they are cut it is in the Scotch mode, which is becoming general throughout the northern part of the county. This work is performed by very sharp knives made expressly for the purpose, light to hand, but very effective

from their high temper. The stems are cut from the ground obliquely, and care is taken that they are all cut upwards, so as not to shatter the top of the stems which are left. If a brush is left on the further side, no other guard is necessary; but on the side from which the operation is performed, when there are cattle, it is necessary to guard it by a dead fence for about two years. The grass and weeds are at the same time cleared from the roots of the stems, and a perfectly new fence springs up, which is thick from the bottom, making shoots in a single year of surprising growth.

The course of cropping followed is similar to the one already described as common throughout the district, but with one very material improvement; namely, that instead of a bare fallow very heavy crops of turnips are grown on the whole farm. These are produced, without any artificial manure, in the following manner:—During the winter months, men are employed in burning the soil from the hedge sides into ashes; these are mixed with night-soil dried until it will admit of being riddled, so that it can be drilled as a compost. The seed is thereby quickened into vegetation, and plants are obtained which soon bid defiance to the fly. The heaviest crops of Swedes are thus grown, which could never have had an existence but for a perfect drainage.

The stock kept on the farm has been increased more than five-fold, and the produce of grain has advanced in the same ratio. It is almost unnecessary to observe that the manure is here an object of especial care. The liquid manure, when such is practicable, is conveyed by drains to the nearest grass-land lying on a lower level, and by zigzag cuttings serves to irrigate and enrich it. When that cannot be done, it drains into tanks, and is carted upon the higher grass-land, which has been thereby converted into grazing-land of the best quality, whereas it is by nature a poor, cold soil.

Such are a few of the improvements, very imperfectly sketched, which have been carried out at Leyfields by Mr. Parkinson, a gentleman of great experience and of no ordinary enterprise. These improvements, we may observe in conclusion, are being repeated by him on an estate which he purchased lately at Drayton; from which circumstance we think it fair to infer that that gentleman, after his long experience, supposes high farming not to be incompatible with profitable farming.

In this division the district south of the Trent is composed of a variety of soils,—from heavy sand to a rich loam, and even strong clay. From Nottingham to Newark, the high ground is chiefly a red soil, between sand and loam, lying upon a substratum of marl, and comprising one of the most naturally productive districts in the county. It is well calculated for sheep, and some excellent flocks may be seen upon it. These farms are many of them much improved by abutting on the Trent, which furnishes to them a proportion of good grazing-land as well as meadow; the former of which is made available in some cases for dairy purposes, and in others for grazing beasts for the Newark and Nottingham fat stock markets. The mode of husbandry most common is the six years' course, resembling that north of the Trent; substituting, however, always when practicable, a turnip crop for a bare fallow. Much of the district has been drained with tiles, and is on the whole very well cultivated, producing heavier crops at much less expense than on the sands of the western division. A stranger must be struck with the superior character of the farm buildings, which are, moreover, kept in extremely good condition, presenting a neatness in the highest degree creditable to the occupiers. The fences are not always so well kept, and might be improved upon. In the neighborhood of Nottingham, potatoes are planted in considerable breadth, as a supply for that market, and most excellent crops are obtained.

Adjoining the county of Leicester the soil assumes a more tenacious nature, and comprises the districts distinguished by Mr. Lowe as the "Vale of Belvoir" and the "Nottinghamshire Wolds."

Improvements have been here, as in other parts of the county, effected to a considerable extent during the last half century. Not only have the inclosures, which were then open, been completed, but drainage has made great advances, although it is by no means as yet perfect. When a thorough drainage is wanting, no course of cropping can be suggested which is not liable in adverse seasons to be frustrated. Whatever mode of husbandry may be proposed by the occupier of strong soils, experience has taught him that where that foundation of all good farming has not been laid, he must in consequence yield to circumstances of which otherwise he would in the main be independent. Experience will better teach him than any covenant by which he might be bound that the growing of two white corn crops in succession is not profitable, that he cannot by such a system keep his farm clean or in good condition. He will therefore, in alternate years, substitute leguminous ones; and the low prices with which he has now to contend will impel him to strain every nerve in protracting as long as possible the period between those years of naked and profitless fallows.

The live stock throughout the whole of the South-Eastern Division has undergone a similar improvement to that described in the western. As, however, in the latter district sheep are the prevailing stock, so may, perhaps, beasts be said to be in the former, from the heavier character of the soil in general, and the larger proportion of permanent grass-land.

The repeated supplies of the improved Durham breed, which have been crossed again by the best short-horn bulls, have raised the cattle to a standard of great excellence.

We have already had occasion to notice the superior flocks of pure Leicester sheep, which had gained for themselves a name when Mr. Lowe wrote of this district, and which we have every reason for supposing is in point of merit progressing; as a general remark, decidedly so.

The necessity of a quick return, through an improved breed both of beasts and sheep, has forced itself on the attention of farmers in general; and the correctness of our remarks may be best ascertained by referring to the general appearance of the fat stock brought into Newark and Nottingham markets, which will bear comparison with any in the kingdom.

(To be concluded in next number.)

THE FIRST AND GREATEST TAX ON LAND.

THAT transportation is the first and heaviest tax on labor and land, we have endeavored to satisfy our readers; and we have done so with a view to convince them that it is a self-imposed tax, the payment of which will cease to be required so soon as they shall have arrived at the conclusion that the farmers and planters of the Union need protection for themselves, and that in perfect protection is to be found the short and profitable road to perfect freedom of trade.

We have now before us some facts in relation to the sugar trade, illustrating so forcibly the extent of taxation resulting from distance from market and the heavy burthen of transportation, that we cannot omit to lay them before our readers. An acre of good land, when well cultivated, will produce, in the West Indies, thirty tons of *plant cane*, prepared for the mill, and these will produce sixty hundred weight of muscovado sugar; while an acre of beet-root will yield but eighteen tons, producing twenty-one and two

fifths hundred weight—a difference that would seem to defy competition, and to require protection to enable the beet-root sugar producer to live by his labor.

Nevertheless, so great are the advantages resulting from *proximity to market*, that sugar made from the beet-root is gradually driving out of the continental markets that produced in the West Indies. The production of domestic sugar in France already exceeds, as we are told, by one third the amount imported from the colonies of Martinique, Guadaloupe, Bourbon and Cayenne, *although the duty is the same on all French sugars whether exotic or indigenous*; and so strong is the tendency in that direction, that the financial returns in France for last year, as compared with the previous one, show an *increase* of duties on domestic sugar of 6,581,000 francs, and a *decrease* on colonial of 6,917,000 francs. The whole amount of duty collected was as follows:—

On French domestic sugar,	-	-	-	-	-	30,526,000 francs.
“ colonial “	-	-	-	-	-	32,853,000 “
On raw foreign	“	-	-	-	-	17,863,000 “

From this it follows that whereas in 1849 the consumption of domestic was only three parts out of seven, it is now four parts out of seven, having increased almost one third; while that of colonial has diminished one fourth—and all this change in a single year! The necessary effect of this must be a diminution in the value of colonial property, because of its distance from market; and that effect must continue to be felt in a daily increasing degree, until the colonists shall exert themselves to make a market on the land for the products of the land.

For The Plough, the Loom, and the Anvil.

BUCKWHEAT.

UNTIL within a few years past, this has been considered almost a valueless crop by many who were considered our most discerning and successful farmers. Indeed, many carried their prejudices so far, that they would not, under any circumstances, allow it to be grown upon their lands, supposing it so exhausting to the soil. Others, more tolerant in their feelings, would sometimes raise a small field, but it must be sown on the poorest corner of the farm, where no other crop would grow, and but an ordinary one of this grain. Then the farmer who was in the yearly habit of raising it was considered a slim affair; one bent on the irrecoverable ruin of his farm.

In late years, however, the value of the crop has been more justly appreciated, so that now the number of those who do not raise it is like that of those who formerly cultivated it, very small. The advantages attending its culture are numerous, and among them the following stand prominent. Its quick maturity, and consequently the delay that may attend tilling the land and sowing the seed, which latter always takes place at the North after all other crops are sown and planted, and from the 20th to the last of June, or between the time of the first and second dressing of the corn field; a season of comparative leisure to the farmer. Then its maturity is at a time when no other crop requires immediate attention, it ripening in September, between the ingathering of the summer and common fall crops.

It is a crop that will succeed with tolerable certainty when other crops will fail. Low, cool, moist, mucky lands, which are seldom dry enough for ploughing in early spring, and which are liable to suffer from drought at the very time when early-sown grain requires moisture, are admirably adapted to this crop. It germinates quickly, and the young plants soon throw their branches abroad so as to shelter the earth from scorching sunbeams, and

enable it to retain its moisture, to be given out as the growing wants of the plant require.

Buckwheat is a cleansing crop to the soil. In many of the old fields in the longer cultivated portion of the country, weeds of various kinds have crept in, as stealthy bushes or loose wild grass, and usurped the place of the more tender and delicious herbage. Wherever this is the case, it is decidedly the best crop to restore fertility and healthful cleanliness to the soil, after the bushes are removed and the sward well inverted, that can be cultivated. Its roots penetrate deep into the soil, which tends to its pulverization, and its shadowing qualities almost forbid any other plant, however strong may have been its foothold, to start beneath its branches. We have in our minds now whole fields which a few years since were covered with a vexatious, overspreading variety of potentilla, which, by cultivating with buckwheat for one or two successive years after the bushes were removed, were transformed into beautiful and productive meadows, free from the unseemly blemishes which but a short time ago disfigured and concealed their surface.

It is a good crop to stock with. It always leaves the ground in a loose friable condition, so that the roots of grass spread rapidly and freely. Although from its shading propensities, grass seed sown with it will not show much progress while the crop of buckwheat is on, yet the harvest is so early, the grass which is to follow has an opportunity to become well set in roots before the coming of winter, and thus be enabled to withstand the vicissitudes that winter brings. It is an article that farmers are prone to leave to nature and its own resources, but there is no crop that shows the benefits of manure, plaster, and ashes, more than this. Its uses are too well known to be dwelt upon. The straw, which by many is considered valueless, is an excellent manure for potatoes, and is highly valuable as a litter to place around fruit trees, its tendency being to rapid decay, and its effect to loosen the soil and leave a light and wholesome mould for its benefit.

W. BACON.

Richmond, Mass., Sept. 5, 1851.

BEAUTIES OF THE COLONIAL SYSTEM.

In a recent British journal we find a statement of the salaries of the principal officers employed by the East India Company in collecting their taxes from the unfortunate Hindoos, a people reduced by *British* free-trade to depend upon agriculture alone, and among whom a constant succession of famines and pestilences is required to keep the population down to the level of subsistence. For more than a century past has that unfortunate country been taxed for the maintenance of British armies and British tax-gatherers employed in inflicting upon it the blessings of the British colonial system, and the result is seen in the total destruction of the great cotton manufacture, followed by a scene of suffering "scarcely to be paralleled in the history of commerce." How liberally these people are forced to pay their task-masters, will be seen on perusal of the following scale of salaries and allowances:

The Governor-General, 240,000 rupees, or \$120,000, per annum, and an outfit of £5,000, or \$24,000.

To each ordinary Member of Council, 96,000 rupees, or \$48,000, per annum, and an outfit of £1,200, or \$5,760.

To each Governor, 120,000 rupees, or \$60,000, per annum, and an outfit of £2,500, or \$12,000.

Such are the salaries of officials paid out of taxes imposed upon a people whose wages are but a dollar per month, without either food or clothing.

We beg our readers now to remark that the largest contributors for the maintenance

of the fleets and armies employed in the devastation of Ireland and India, and the destruction of the happiness and the hopes of the almost countless millions of the unfortunate people of those countries, are the farmers and planters of the American Union. But for the power to collect taxes among the people of the world, resulting from the existing monopoly of machinery for the manufacture of cloth and iron, the colonial system could not be maintained even for a single hour. In determining to make a market on the land for all the products of the land, the planter and the farmer will not only enrich himself, but he will do more for the cause of liberty throughout the world than could be done by the largest fleets and armies; and instead of taxing himself for the maintenance of soldiers and sailors, he will be enriching both the land and himself. The true road to power, peace and freedom, lies through perfect protection to themselves in their efforts to bring the loom and the anvil to take their natural places by the side of the plough and the harrow.

EFFECT OF SEPARATING THE CONSUMER AND PRODUCER.

It has been at all times the policy of England to compel the people of the world to make their exchanges in her ports, and to have their raw materials carried in her ships, to be converted in her looms, and returned again in her ships to the place at which they were to be consumed; and in every single instance in which she has been enabled to enforce compliance with her will, the effect has been the same—the almost total destruction of the value of labor and land. In India, labor is valueless, and the most fertile lands are abandoned, while the whole class of small landholders has disappeared from the face of the earth. In Ireland, labor is of little value, and of three hundred thousand occupants of land, two hundred thousand have already disappeared—and the land itself is now being sold out under a government commission, to those of the people of England who have accumulated fortunes by acting as the middlemen between the consumers and producers of Ireland and of India. In her American possessions the same result is every where visible. The land-owners of the West Indies have been ruined and their estates are gradually passing into the hands of strangers, at prices almost inconceivably low, as will be seen by the following article from the *London Times* :—

“On the 22d ult., the extensive property on the Demerara river, known as Loo, and containing *fifteen thousand acres* of land, was sold at execution for two thousand dollars. ‘The sale of this large tract of land,’ says the *Royal Gazette*, ‘which is situated at an easy distance from George Town, and surrounded by numerous settlers and small freeholders, is another forcible proof of the extreme depreciation of landed property in this colony. The lowest upset price, fixed some years since, for Crown lands in this country, was one pound sterling (\$4.80) per acre, nor at the time when this rate was established was it considered by any means high for even the wild and remote wood lands of which the Crown property in Guiana mainly consists. Yet here we see an estate of 15,000 acres, eligibly situated on the banks of our most valuable river, with abundance of labor on hand presenting itself for employment, realizing at a public sale, and at a credit of 3, 6, 9 and 12 months, *only sixpence two thirds sterling per acre!*’”

The tendency of the whole British monopoly system is to destroy every where the power of association—to compel the people every where to impoverish their land and themselves—to diminish the productiveness of land and of labor—to enslave the laborer and then to ruin the land-owner—and yet we find the laborers and land-owners of the Union combining their efforts for the maintenance of this most destructive system, when it needs but the slightest effort to terminate its existence, and thereafter to be enabled to enrich their land and themselves—making a market on the land for its products, and returning to it all the manure now wasted on the road and in distant markets.

For The Plough, the Loom, and the Anvil.

HOME SONG OF THE AMERICAN PRODUCER.

BY WM. OLAND BOURNE.

GIVE me the blue of the bending sky
O'er the land of the freeman hung,
And the bright full beams of the sun on high,
While the hymn of the free is sung:
Oh, ne'er has the sky o'er a land like ours
Bent down with its arch of blue,
Or joyfully wept in its crystal showers,
Or gemmed the glad earth with dew.

Give me the land where a tyrant strong
Ne'er trod with his iron heel,
But the land where the shouting, working throng
Exult in a sounding peal;
Where the strong man looks to his Maker, God,
As he falls on his bended knee,
Then thrusting the blade in the uncursed sod,
Thanks Heaven that he is free.

Give me the land where the plough's bright share
Turns wealth from the virgin soil,
Nor melts in the forge whence the Vulcans bear
A sword for the warrior's spoil;
Not the song of the soldier's bloody trade,
Nor the trumpet's startling twang,
But the vow of peace on the altar laid
Round the hearth-stone fondly sang.

Oh, bright is the land where the golden grain
Waves over the fertile fields,
And the tall ripe corn on the spreading plain
Its harvest of bounties yields;
Where the sounding flail, as it swings in air,
Falls fast on the threshing-floor,
And the autumn sun shows the toilers there
With the gold dust covered o'er.

Weave out, from the threads of the busy loom,
A story of meaning high,
While the workers throng in the lighted room,
And in labor proudly vie;
Weave out, by the hands of the maidens fair,
As they sing mid the shuttle's sound,
The fabrics of home-made cloth to wear,
As fine as ever were found!

Let the hammer vast on the anvil ring,
As it moulds the massive shaft,
And the workers bold all their forces bring
In the skill of their handicraft.
Let the iron rest! Let the hammer groan!
Let the labor harp be strung!
While the mighty tone of that string alone
With its joy around is rung.

Kindle the flames in the furnace fire,
In the smoky, belching forge,
While the red flames leap in their earnest higher,
From the pit the toilers gorge;

Let on the blast of the bellows vast,
Till the ore with its fiery breath
To a molten sea is resolved at last,
Like a crater filled with death.

Delve down in the deep and gloomy mine,
And bring out your treasures thence ;
Where the richest ores in their beauty shine,
The bounties of Providence ;
They are given for use by the freeman's hand,
In the glorious arts of Peace,
Till his voice shall cry in each older land
That the despot's power shall cease.

Leave not in the earth, or the mountain side,
The wealth which is freely given ;
Go, sharpen your drills, and your task abide,
Till the solid rock is riven :
There is gold in that mass of iron ore !
There is gold in that glittering pile !
Which freemen may win from the ample store,
And sing of their joys the while.

Send forth on the broadly rolling stream,
And the river's flowing tide,
With the mind of man, and the might of steam,
The vessels that swiftly glide ;
Pile them up high with the countless stores
Well earned by the freeman's hand,
While they bear to the isles and the distant shores
Their blessings to every land.

The iron horse send with his heart of fire,
And the lightning speed he hath,
While his feet in their ardor never tire,
Rotating upon his path ;
Pile up the burden vast and high !
For a wondrous steed is he,
In the mighty strength of his forge-cast thigh,
And the might of his pliant knee !

Let the broad land wake in its proudest bloom,
In the light of our broader skies !
Let the Anvil, Plough, and the busy Loom
In their power and grandeur rise ;
Let the workers all, in their well-paid toil,
Rejoice with a labor song,
And the blessing of God on the uncursed soil
Be sought by the trusting throng.

Let the yeoman sing as he tills the land,
And follows the shining plough !
Let the toiler sing, as he lifts his hand,
Oft wiping his sweating brow !
Let the maiden sing ! Let the Anvil ring !
And the radiant truth be told—
That the labor of home, in its fruits, shall bring
A truer wealth than Gold !

Then, give me the blue of the bending sky,
O'er the land of the freeman hung,
And the bright, full beams of the sun on high,
While the hymn of the free is sung :
Oh, ne'er has the sky o'er a land like ours
Bent down with its arch of blue,
Or joyfully wept in its crystal showers,
Or gemmed the glad earth with dew !

LIGHT IN THE NORTH-WEST.

IN our last we laid before our readers a letter from the South-West, that had brought us the subscriptions of four anti-tariff Democrats, who had been converted to the true faith by studying the arguments which had been furnished in this journal in support of the great truth, that the planters and farmers who would grow rich must make a market on the land for all the products of the land, and thus enable themselves to restore to the land the refuse of its products; and we are happy now to lay before them unmistakable evidence that the same great truth is now making its way in the North-West, as it must speedily do in every portion of the Union, North, South, East, and West.

The citizens of Wisconsin, of German birth, have generally voted the same description of ticket that has heretofore been voted by our anti-tariff friends in Mississippi, because it bore the label of "Democratic," and the counties that they have chiefly occupied have given overwhelming majorities in favor of the men whose policy looked to the prostration of the American laborer, and the maintenance of British supremacy over the commerce of the world. They are, however, a people who read and reflect, and they are now discussing the great question of protection to the farmer and planter in their effort to draw to their side the men who drive the shuttle and strike the hammer, the result of which is seen in the following, from the *Green Bay Spectator* of the 27th ult:—

THE GERMAN PLATFORM OF BROWN COUNTY.—Our German fellow-citizens in this county have been holding a series of meetings at the Town Hall, in this place, for the investigation and discussion of the great political questions which interest or affect the people of Wisconsin. These meetings have been largely attended, and their proceedings manifested the utmost harmony and good feeling, and a desire fully to investigate every subject of any political importance, and to act understandingly in voting at the polls.

Among the resolutions that have been adopted are the following:

They resolved that they were Democrats, but that they should support principles instead of party, and vote only for the men who were pledged to sustain the measures which they deemed the most judicious.

They resolved that *they are in favor of a Protective Tariff.*

It is time that the planters and farmers of the whole country should meet together and follow the example thus set them by these intelligent foreigners. They have long enough been hoodwinked and deceived by the advocates of the great British monopoly, who would have them believe that they were to be enriched by a process that exhausts their soil and ruins themselves, and the sooner they shall awake to the fact that such is the tendency of *British* free-trade—and that it is by that process that Ireland, India, Portugal, and the West Indies have been ruined, and Canada has been paralyzed, the sooner will they begin to increase in wealth, and the sooner and more rapidly will the nation of which they are part increase in power.

EXTRAORDINARY CHANGE OF POSITION.

IN the debate on the question of a non-exportation agreement, in the Congress of 1775, the following was the ground taken by Mr. E. Rutledge, one of the members from South Carolina, as given in the report contained in the recently published works of Mr. Adams:—

"E. Rutledge differs with all who think the non-exportation agreement should be broke, or that any trade at all should be carried on. When a commodity is out of port, the master may carry it where he pleases. My colony will receive your determination upon a general non-exportation; the people will not be restless. Proposes a general non-exportation until next Congress.

Our people will go to manufacturing, which is a source of riches to a country. We can take our men from agriculture and employ them in manufactures. *Agriculture and manufactures cannot be lost ; trade is precarious."*

Had such continued to be the policy of South Carolina, how different would now be her position ! Instead of having continued, for the whole period that has since elapsed, to exhaust her soil, she would have been steadily improving it, with vast increase of both wealth and population, and she would now export cotton cloth to all the world, and Charleston would be a great seaport, occupied by extensive shipowners, whereas she maintains little commerce except with England, and most of that carried on through northern ports, in northern and foreign ships ! She insists on continuing to maintain the colonial system, which looked to compelling the world to perform all their exchanges in British ports ; and she is almost ready to separate from the rest of the Union, rather than follow the course indicated by her representative in the Congress of 1775.

For The Plough, the Loom, and the Anvil.

ANALYSIS OF THE TURNIP BEET.

BY J. H. SALISBURY, M.D., CHEMIST TO THE NEW-YORK STATE AGRICULTURAL SOCIETY.

THE beet has been cultivated about two centuries. During its cultivation the varieties have become somewhat numerous. The one here examined is the variety which goes by the name of *turnip beet*. For the specimens analyzed I am indebted to the kindness of Mr. Douw, of Greenbush. They were large, fleshy and crisp, and contained about the average amount of woody fibre. The widest average diameter of the roots of the four specimens analyzed was $5\frac{1}{2}$ inches ; average length, 9 inches ; average length of tops, 14 inches ; average weight of each plant, $1\frac{1}{2}$ lbs.

PERCENTAGE OF WATER, DRY MATTER, AND INORGANIC MATTER.

	Fresh Root.	Fresh Tops.
Percentage of water, ...	92.845	88.907
" " dry matter, ...	7.155	11.025
" " inorganic matter, ...	1.113	1.530
" " " " in dry matter, ...	15.556	13.876

The above results show this variety of beet to be more highly charged with water than the artichoke, parsnip, or carrot. The root, as will be seen, contains almost 93 per cent. of pure water ; the tops nearly 89 per cent. ; leaving of dry matter but little over 7 lbs. to the hundred in the root, and 11 lbs. in the tops. The fresh roots contain but little over 1 lb. of inorganic matter to the hundred, the dry roots about $15\frac{1}{2}$ lbs. ; the fresh tops $1\frac{1}{2}$ lbs., the dry tops nearly 14 lbs. In round numbers, 8,994 lbs. of the fresh roots of the turnip beet give 100 lbs. of inorganic matter ; and 6,536 lbs. of the fresh tops, 100 lbs. of inorganic matter.

COMPOSITION OF THE INORGANIC MATTER OF THE ROOT AND TOPS.

	100 lbs. Inorganic Matter of Roots.	100 lbs. Inorganic Matter of Tops.
Carbonic acid, ...	21.90	19.61
Silicic acid, ...	1.15	1.43
Phosphoric acid, ...	10.55	8.32
Phosphate of iron, ...	1.90	3.51
Lime, ...	8.80	5.62
Magnesia, ...	1.75	8.11
Potash, ...	8.05	8.34
Soda, ...	42.35	36.33
Chlorine, ...	0.80	2.91
Sulphuric acid, ...	1.90	5.12
Organic matter, ...	trace.	trace.

By good management, twenty tons of the roots can be easily raised to the

acre. Twenty tons of the roots of the turnip beet contain of inorganic matter 445 lbs. These 445 lbs. are made up of—

Carbonic acid, ...	98 lbs.
Silicic acid, ...	5 "
Phosphoric acid, ...	48 "
Phosphate of iron, ...	8½ "
Lime, ...	40 "
Magnesia, ...	8 "
Potash, ...	36 "
Soda, ...	189 "
Chlorine, ...	4 "
Sulphuric acid, ...	8½ "

The following materials, in the proportions given below, furnish in sufficient quantity all the bodies removed by twenty tons of beet roots, and even more of some of them than is required:—300 lbs. of ashes, 200 lbs. of common salt, and 6 tons of good barn-yard manure.

The tops are generally left upon the ground; hence it is not necessary to include these in the materials removed from the soil.

PROXIMATE ORGANIC COMPOSITION OF ROOTS.

	100 lbs. Fresh Roots.	100 lbs. Dry Roots.
Water, ...	92.845	
Fibre, ...	2.173	29.975
Sugar, ...	3.120	48.039
Dextrine, ...	1.025	14.134
Casein, ...	0.142	1.965
Albumen, ...	0.445	6.138
Starch, ...	0.195	2.690
Resin, ...	0.080	1.103
Gluten, ...	0.033	0.448
Red coloring matter, ...	0.027	0.380
Fat, ...	0.010	0.138

In the above analysis we see the nutritive powers of the beet root. The average amount of dry matter in the fresh mature roots ranges from 8 to 10 per cent. One ton of the fresh roots of the turnip beet contains, of sugar, 62½ lbs.; of dextrine, 20½ lbs.; of albumen, casein, and gluten, 12½ lbs.; of water, 1856.9 lbs.

ULTIMATE ORGANIC ANALYSIS OF ROOTS.

One hundred parts of dry root gave of—

Nitrogen, ...	1.270
Carbon, ...	38.610
Oxygen, ...	39.240
Hydrogen, ...	6.054
Inorganic matter, ...	15.556

EVILS OF DISPERSION.

"THE emigrant road over the desert, beyond Humboldt river, is literally strewed with dead carcasses. A gentleman who reached Sacramento City about the middle of July, counted twenty head of cattle in as many feet square; for forty miles they average one to every ten feet, making a total of twenty thousand. The wagons are one to every rod. Of eleven thousand that started for California last year, not one half reached their destination."

Such are the effects of a system that tends every where to prevent the farmer or planter from making a market on the land for the products of the land. Forbidden, by

the absence of markets, from raising potatoes, turnips and cabbages, commodities of which the earth yields by tons, he raises wheat, cotton, or tobacco, to be consumed at a distance; and then, having exhausted his land and impoverished himself, he flies for Oregon or California, and perishes on the way. Such is every where the tendency of *British* free-trade. It has exhausted Ireland, India, Portugal, and the West Indies, and but for even the little protection here afforded to the farmer and planter, it would have exhausted them.

THE IRRIGATION OF SMALL PLOTS OF GRASS LAND.

BY CUTHBERT W. JOHNSON ESQ., F.R.S.

As the importance of irrigation becomes more generally understood, several minor questions arise well worthy of even the farmer's consideration. The word "irrigation" naturally induces the cultivator to think of meadow lands lying by the banks of copious streams; or if he extends his views to the far more valuable system of sewerage irrigation, he as naturally thinks of those favored meads adjoining populous places—towns whose sewerage is available in copious supplies. This, however, is taking a very limited view of the value of sewerage irrigation, even on a small plot of ground to a farm. There are very many situations where the farm house is situated at such an elevation as to admit of its sewerage being carried by its own gravity on to desirable lands adapted for the formation of watered plots of grass; and although the plots which are thus watered must be of limited extent if they have to rely upon the house sewerage *only*, yet where there is an available spring of water to dilute the sewerage, in that case plots of grass may be readily watered to an extent worthy of most farmers' attention; for not only is one rood of such a mead fully equal in produce to three of ordinary pasture land, but it furnishes grass for the purpose of soiling, not only early in the spring, but late in the autumn—periods when it is not procurable from any other source.

As I observed on another occasion, (*Cottage Gardener*, vol. v., p. 39,) the advantage of applying house sewerage to grass has long been known to be very considerable. For the purpose of testing the various little points of detail which might arise when carried on on a small scale by small landholders, I laid down the turf on a plot of grass in my garden, near Croydon, in February and March, 1850. This was only 16 yards long, and 13 yards broad. The bed, therefore, contains only about 208 square yards, and is surrounded by a raised border of turf about two inches high, to prevent the escape of the irrigating sewerage; and for a similar purpose the bed is divided by two turfed ridges of about the same size into three compartments. These ridges would have been repeated crosswise, so as to divide the bed into nine compartments, (to suit the size of our beds to the bulk of our sewerage,) had we not wished to avoid impeding the action of the scythe, the whole produce being intended for the soiling of a pony. Soon after the bed was formed, earthenware pipes of about two inches bore were laid down, extending from a tank constructed on some higher ground than the grass-plot, the contents of which, whenever the tank is sufficiently filled, is allowed (by the lifting of a plug) to flow on to the grass; the orifice of the pipe from whence the sewerage issues being about eight or nine inches above the level of the turf. From this pipe the sewerage is distributed, by means of an open wooden trough, to any part of the plot that is just cleared. Our practice has been to cut sufficient grass for two days' consumption, and then immediately the grass is removed, to direct on to the cleared space all the sewerage which has accumulated since the last cutting, occasionally adding to its bulk by allowing

some pump water to flow for a minute or two from the sink through the house-pipe drain into the tank. By this plan the collateral advantage has arisen that the sewer-pipe, tank, and delivery pipe, as well as the house sewerage itself, by being so constantly cleansed or removed, has not time to undergo putrefaction. The plan, therefore, is carried out (generally the first thing in the morning) without any of the inmates or visitors to the house being aware that such a manuring is systematically going on. The result, in fact, shows that the noxious effluvia from sewers arises, not as a necessary result of the matter conveyed in them, but from their ill construction, and the barbarous practice of allowing the long accumulating contents of overflowing cess-pools and choked drains to flow into them.

The general result of this little experiment has been such as to induce me to confidently and warmly recommend the repetition of the plan to such of my readers who are so situated that the contents of their house-tanks can be directed by its own gravity on to a conveniently placed grass-plot. The herbage produced by this mode is not only exceedingly luxuriant, but the pony and some goats we notice decidedly prefer it to either lucern or meadow grass, produced without irrigation; and the same remark is made by one of my neighbors, who has a field irrigated with the water of the river Wandle, which contains occasionally a notable portion of the drainage of the town of Croydon.

It is perhaps of little use (as our turf was only laid in March) to report one season's produce of grass; still, as we have kept an account of it, it may be cheering to the reader to have the account. The grass was not ready to cut the first time until May 25th, since the turf had to establish itself, and to contend with dry weather. The weight and the days of cutting were as follows:—

May 25, - - -	28 pounds.	June 8, - - -	65 pounds.
" 27, - - -	40 "	" 10, - - -	50 "
" 30, - - -	42 "	" 12, - - -	50 "
June 1, - - -	50 "	" 15, - - -	50 "
" 3, - - -	60 "		
Total, - - -			435 "

The ground was then irrigated as I before described, only once. It began to grow again *immediately*, and kept on in spite of a very dry season, which *parched up all the surrounding grass lands*. By July 27th it was ready to cut again—the produce being evidently better than before. The days of cutting and the weight of this second crop were then—

July 27, - - -	75 pounds.	Aug. 5, - - -	60 pounds.
" 30, - - -	65 "	" 7, - - -	50 "
Aug. 1, - - -	55 "	" 8, - - -	40 "
" 3, - - -	40 "	" 10, - - -	75 "
Total, - - -			460 "

The same plan was a third time carried on of cutting and irrigating; the same dry weather still attended us, and the same growth of grass took place. On the first of October the cutting of our third crop of grass was commenced. The produce was as follows:—

October 1, - - -	70 pounds.	October 11, - - -	50 pounds.
" 5, - - -	50 "	" 14, - - -	45 "
" 7, - - -	50 "	" 16, - - -	45 "
" 9, - - -	50 "	" 18, - - -	45 "
Total, - - -			400 "

The same immediate irrigation was applied to the land, and the same rapid

shooting of the grass for the fourth time took place. The reader will remark that we have thus secured three crops, and lost the time (in February and March) sufficient for the growth of a fourth; but, omitting that from our calculations, we have mown 1,295 lbs. of grass off 208 square yards of land since the turf was first laid in March, or at the rate of $13\frac{1}{4}$ tons per acre. The sewer-irrigated meads of Edinburgh always produce four or five crops annually, and I see no reason why we cannot do the same in future seasons, for the soil is evidently improved as well as its produce by the irrigation. By the term house-sewerage, I mean the term to comprehend the entire house drainage in its most extensive sense.

It is fortunate that we are able (in spite of the distastefulness of the inquiry) to ascertain not only the bulk of the sewerage flowing from a house, but its chemical composition. Its bulk may be regarded, in the case of houses well supplied with water and water-closets, to amount to about ten to fifteen gallons per day for each member of the establishment; and yet notwithstanding its necessary mixture with water, it still may be very advantageously diluted with several times its bulk before it is allowed to flow on to the grass. Its composition has been recently examined by Dr. Anderson (*Trans. High. Soc.*, 1850, p. 370). This report is the more valuable because it contains the analysis of not only the sewerage of a city drain at Edinburgh, but also that from a tank belonging to a public establishment. As the Professor remarks, the sewerage water of Edinburgh was taken from the mouth of the sewer just as it enters the irrigated meadows near Lochend. It contained a considerable quantity of solid matter in mechanical suspension, which was carefully mixed up with the water by agitation, and the whole employed for analysis. This, which was made with great care, by Mr. Hugh Taylor, gave the following results in an imperial gallon:—

	Grains.		Grains.
Organic matter soluble in water,	21.90	Phosphoric acid,	6.14
Organic matter insoluble in water,	21.70	Chlorine,	12.20
Peroxide of iron and alumina,	2.01	Potash,	2.89
Lime,	10.50	Soda,	13.27
Magnesia,	2.00	Silica,	6.50
Sulphuric acid,	6.09		
Total,			105.20

What is here called organic matter is the whole amount of volatile matter expelled by a red heat. It contains, however, a very large quantity of ammonia, amounting to not less than 7.7 grains in a gallon, in addition to which the organic matter contained 5.93 grains of nitrogen in the form of nitrogenous compounds.

The Morningside sewerage was taken from the tank at the Morningside Lunatic Asylum, in which the whole sewerage water of the establishment is collected. The analysis, which was made by Mr. Rowney, includes the whole of the matter mechanically suspended in the water:—

	Grains.		Grains.
Organic matter,	51.77	Soda,	3.00
Alumina,	4.93	Potash,	2.66
Protoxide of iron,	10.34	Carbonic acid,	11.22
Lime,	11.99	Sulphuric acid,	3.12
Magnesia,	2.84	Phosphoric acid,	1.32
Common salt,	4.49	Silica,	25.02
Total,			132.71
Ammonia,			3.18

From the result of these examinations it would appear that, of the specimens examined, the town water is richer in all the valuable constituents of a

manure than that of Morningside. At the same time, concludes Dr. Anderson, I consider the latter as in all probability giving a *better general idea* of the value of sewerage water than the former. It is easy to compare the value of sewer water with that of any other manure, by calculating how much of it will contain the same amount of valuable matter as any quantity of the manure in question. Selecting ammonia as the most important constituent, I find by calculation that in round numbers 10,000 gallons of the Edinburgh, and 36,000 gallons of the Morningside sewerage water will contain about the same weight of that substance as 100 lbs. of Peruvian guano.

These results afford ample materials for the useful consideration of the owners of every farm—nay, of every rural garden. And when the citizen reads this, he too may make an inquiry, and place upon paper a few figures well worthy of his profitable consideration. Let him take the sewerage of London, *daily* amounting to more than 40,000,000 gallons; let him calculate the value of only the ammonia and phosphate of lime of each 36,000 gallons of this vast bulk to be equal to that of 1 cwt. of Peruvian guano, viz., £9 per ton. Having taken these data, let him multiply its daily value by 365, and then let such an inquirer coolly ponder over the results. It will amount in annual value, he will find on these data, to about £210,000. In making such an inquiry, too, he will probably afterwards remember, after a little reflection, that this huge mass of valuable matter is at present not only *merely wasted*, but that it is allowed to be actually injurious to mankind, by corrupting the waters of the river from whence they are supplied, and the atmosphere in which they exist.—*London Farmer's Magazine*.

COMPETITION WITH CHEAP LABOR.

"THE more cheap labor you purchase, the richer you will grow," says our late Secretary, Mr. Walker. "If you obtain two days' labor for that of one day, you make a good exchange." Such is the doctrine upon which is built the whole modern system of British free-trade; and yet we every where find the Englishman himself flying from the competition of cheap labor. In a recent British journal, the special advocate of the colonial system, we find the following passage, which we recommend to the careful consideration of all those who think it better to *compete* with England in the effort to underwork the half-starved Irishman and the perishing Hindoo, than to *combine* their efforts with those of the people of Germany, of Belgium, and of France, for the annihilation of the monopoly by means of which the people of Ireland and of India have been prevented from bringing the loom and the anvil to take their places by the side of the plough and the harrow.

Speaking of Van Diemen's Land, the writer says:—

"The higher class of emigrants, on the other hand, naturally avoided a colony where nearly a half of the inhabitants were criminals undergoing punishment; while in the towns, the artisans and tradesmen were *continually exposed to the ruinous competition of convict labor*. The consequences have at length proved detrimental in the highest degree. Owing to the scarcity of free emigrants, land, during the last few years, has seriously declined in value. The commerce and trade of the island have languished from the same cause; and unless speedy measures are taken to arrest the downward progress of this once flourishing colony, we may expect to see a still more rapid period of decay."—*Colonial Magazine*.

Great Britain and Ireland, under the system denounced by Adam Smith, but now

known by the name of British free-trade, have become one vast prison, in which the condition of the people is so much worse than that of convicts, that it is now taught in books of the highest authority among free-traders that labor is a commodity like all others, and that the man who, however able and willing to work, cannot find sale for his commodity, has no right to claim a seat at the table provided by the Giver of all good things for the benefit of all mankind. He must starve. If, then, competition with the convict labor of Van Diemen's Land, *who must be fed*, be found destructive of the value of labor and land, how much worse for the laborer and the land-owner must be competition with the labor of the man who is kept in a great prison, *with no right to claim even food*, unless he can find some one willing to grant him a modicum of subsistence in exchange for his labor. We beg our farmers to remark the fact, that the greater the necessity for competition with the cheap labor of Europe—the larger the quantity of food for which they have needed to seek a market abroad—the lower, invariably, has been the price of grain; and we beg our planters to remark the fact, that the more their necessity for competing with the cheap labor of India—the larger the quantity of cotton for which they have been compelled to seek a market abroad—the lower has been the price of cotton. If they wish then to raise the value of their own labor and their own land, the true and only road to the accomplishment of that object is that of making a market on the land for the products of the land, and thus diminishing the necessity for competing with the occupants of the vast prison of the Eastern Hemisphere.

It is here said that, "owing to the scarcity of free emigrants, *land has seriously declined in value*." Such decline has taken place in all the Southern States, because men have not only not come into those States, but have been steadily flying from them, because of the unceasing exhaustion of the land and waste of the planter's capital. To avert this decline, it is essential that population should be retained by making a market on the land for the products of the land.

CHEMISTRY APPLIED TO AGRICULTURE—DR. ANDERSON.

BY A FARMER.

THE peculiarity of Dr. Anderson's style of treating questions connected with agriculture is, that he is the first and only one, of the numerous writers which have passed under our notice, who admits that he has any thing to learn from practical men. This peculiarity is the more striking as it is the very antipodes of the opinions expressed by more than one of his predecessors. As remarked in a previous paper, the writers on agricultural chemistry were prepared with an answer to *every* question proposed to them; they knew the value of a manure, or of a hitherto untried article of food, whether for man or beast; they knew, by the aid of analysis, what a soil required to make it fertile for sugar-cane or cabbage, potatoes or palm-trees—no matter whether the soil examined might be from Demerara or Greenland. As the very reverse to such ignorant presumption—for we can call it nothing else—Dr. Anderson, in his lecture delivered at Glasgow, acknowledges that he has "questions constantly presented to him, on which he possesses no information at all." In the present days of quacks and quackery in matters bearing on agricultural chemistry, when the agricultural world is in a state of nervous anxiety for information, bold indeed must that man be who makes such an acknowledgment. It is a more cutting reproof to those who thought they had a "solution in their laboratory to every question proposed to them" than we dared to administer. Nor does Dr. Anderson think we shall ever arrive at an answer to these "questions" by the maiden efforts of science. No; "we

must depend for their solution on the mutual aid of science and practice; the two must go together."

A correspondent of the *Times* criticises this address very severely, and complains that it contains nothing new. We uphold, on the contrary, that it is entirely new, but more especially in modesty. By the way, we are at a loss to know why the *Times* should have been selected as the medium for criticising Dr. Anderson's lecture, instead of any of the numerous papers and magazines exclusively devoted to agricultural subjects.

Whether such an avowal be complimentary to Dr. Anderson or not, we confess to have derived great pleasure from this lecture, containing, as it does, a clear summary of the views we have in this series of papers endeavored to maintain. We have, therefore, nothing to criticise or find fault with, but gladly embrace the opportunity thus afforded to gather up the scattered fragments of good sense we have met with in the course of our labors.

The object of the lecture is to explain the principles of manure; or, in other words, why they act beneficially, and how we can improve them.

When any plant is burnt, a large portion of it disappears, and the residue is called the *ash* of the plant. With regard to the first of these two portions, namely, that which disappears in the fire, or as they are commonly called, the *organic constituents*, we have a two-fold source from which they may be derived. "The plant may, and in some instances does, obtain the whole of its organic constituents from the air, but this is far from being the only source from which it obtains them; for in all soils there is found a large quantity of *organic matter*, containing the whole of the organic elements (carbon, oxygen, hydrogen, and nitrogen) in such a condition as admits of their passing into a state in which they may be assimilated by the plant." It will be observed that Dr. Anderson does not enter into a discussion on the merits of the theory proposed by Johnston, that plants extract their nourishment from the soil as *humic*, *crenic*, *apocrenic*, *glic*, and *ulmic* acids, or in the form of *ulmin* and *humin*. Nor does he discuss the opinion of Liebig, that plants are fed by the carbonic acid of the atmosphere. "Some of the facts of the case have been determined in the laboratory;" but as long as science and practice work separately, the only result has been mere speculations like the above, of which science has supplied "one set, and practice the other." Dr. Anderson has contented himself with stating the fact that the organic matter present in the soil is useful to vegetation, as proved by its removal by certain crops: how it acts is one of the matters on which we require further information.

With regard to the *ash*, or inorganic portion of the plant, Dr. Anderson states that "every fertile soil must contain all the constituents of the plants which grow upon it, and that, too, in a sufficient quantity to supply many successive crops." But the mere presence of these substances does not insure the fertility of the soil: it is necessary that the state of combination in which they exist be such as admits of their becoming readily available for the growth of the plant. In the first place, they must be presented to it in a soluble condition. At the same time they must not be too readily soluble, or the rains would soon carry off the valuable matter. In soils, and what we may call natural manures, as the dung of animals, this risk is avoided by the arrangement that the ingredients required by the plants are, in the soil and in fresh dung, in the state of insoluble compounds, which are only rendered available to vegetation by very slow decomposition. The whole principle of agriculture, says Dr. Anderson, is to obtain by proper management, from a given surface of land, a greater amount of vegetation than it is capable of yielding in a state of nature. This is effected by two methods: the first is by tillage, which by breaking up the land and exposing it to the atmosphere facilitates the decom-

position of the insoluble matters in the soil, and renders them available to vegetation; the other method of increasing the fertility of the soil is by supplying to it those substances which the plant requires,—in other words, by the use of manures.

Dr. Anderson gives as his opinion that a fertile soil must contain all that the plant requires: so a good manure, or one which is to be generally useful, must also contain “all the substances requisite to vegetation,” that is, those which are present in the *ash*. In the course of these papers we have occasionally had to dispute the extravagant estimates which some writers have formed of the value of a single substance as a manure. For instance, a French chemist asserted that the value of a manure might be calculated by the amount of nitrogen it contained; others again have lauded the phosphates, and alleged that with a plentiful supply of them the plant required nothing more. Dr. Anderson’s opinion, as above quoted, and in which we cordially agree, strikes at the root of such crude opinions. He arranges the ingredients of a good manure, as regards their comparative value, as follows:—first, ammonia; next, phosphoric acid; and then potash.

Those substances—as nitre, the salts of ammonia, superphosphate of lime, and some others—which are capable of supplying separately only one of these three important ingredients, can only be “advantageously used in those cases where the soil is deficient in the single ingredient they contain.” As such instances are, however, very rare, the safest plan the farmer can pursue is to use those manures which contain all the substances required by vegetation. The first of these is farm-yard manure, which must always be the farmer’s mainstay; every thing else ought only to be considered as an assistant to it. Farm-yard manure will always contain more or less of the ingredients present in our crops; whereas, the artificial manures, as commonly applied, will only contain one or two of them: their chief advantage being that they contain the valuable constituents in a “more concentrated form, more free from foreign and worthless ingredients, and consequently in a state in which they may be carried to the farm at less cost than the deficiency could be supplied by bringing farm-yard manure from a distance.” It is these properties which constitute the chief value of artificial manures, and when they are used along with a portion of farm-yard manure, the farmer by this combination secures the best possible mixture for his crops.

Dr. Anderson acknowledges that we are as yet unable to decide as to the best method of managing farm-yard manure. By too much fermentation the risk of losing the ammonia is greatly enhanced, and by too little the inorganic matter remains insoluble, and consequently unfit for immediate use. The application of small quantities of gypsum remedies the former evil, and the latter the farmer has to some extent under his own control.

There are several other disputed points on which Dr. Anderson treats in the lecture in a very clear, intelligible manner, removing the prejudices with which some manuring substances are viewed, and correcting the artificial value some of them have obtained. Amongst others, he shows that bones in their natural state are richer as manure than boiled bones, and much more likely to be useful than burnt bones—some practical men being disposed to estimate the latter as highly as either of the other kinds. Dr. Anderson justly considers guano to be the best of all these artificial manures, because it combines in itself, to some extent, all qualifications which have been assigned to a good manure. It contains ammonia, phosphoric acid, and potash or soda.

Such is a brief summary of the views advocated by Dr. Anderson; and however they may have suffered in our hands, in the lecture they are explained with clearness and delivered with modesty.—*London Farmer’s Magazine*.

PHOSPHATE OF LIME AS A MANURE. .

THE following article will interest many of our agricultural readers. Of all of them we would direct the attention with special reference to the fact that English farmers are willing to pay for this substance £5 or \$24 per ton, while American farmers waste millions upon millions of tons of manure, because of their determination not to make a market on the land for the products of the land. The *Mark Lane Express* of the 18th of August gives the annexed account of proceedings in the Royal Agricultural Society of England, in relation to the "American Phosphate of Lime:"—

The Secretary having been directed by the Council to make special inquiries on the subject of the occurrence of mineral phosphate of lime in the United States, and in reference to the specimen of that substance which Dr. Daubeny had forwarded to the Duke of Richmond, replies were received from His Excellency, the American Minister, Dr. Daubeny, Sir R. I. Murchison, Sir Charles Lyell, Capt. W. H. Smyth, Dr. Shawe, Prof. Johnston, of Durham, Mr. Johnson, Secretary of the New-York State Agricultural Society, and Dr. Cooke, Professor of Mineralogy in Harvard University, and laid before the Council on the 25th of June last. The following results may be deduced from this correspondence:—

1. That mineral phosphate of lime has been found in the American States of New-Jersey and New-York; and there is a great probability that it will be discovered in other States of the Union, as well as in Canada; it is also not improbable, from analogical considerations, that this crystalline substance may be found to exist among the metamorphic masses of the Highlands of Scotland and elsewhere.

2. The specimen from New-Jersey, forwarded by Dr. Daubeny to the Duke of Richmond, had the appearance of a remarkable variety of crystalline rock; but the formation in which it occurred was not stated. It was found by Prof. Maskelyne to contain 95 per cent. of the phosphates of lime, iron, and alumina. Its importation was made by Messrs. Jevons, of Stamford place, Liverpool. One vein alone, discovered in New-Jersey, would supply the English market for many years.

3. In the State of New-York a great mass of this mineral has been discovered, and a shaft had already been sunk to the depth of nearly thirty feet. This vein occurred at Crown Point, near Lake Champlain, in Essex county, and the abundance of the mineral was so great as to lead to the conclusion that this mine contained an inexhaustible supply; the locality was also favorable for facility of transport and ready shipment. This vein consisted of grains and crystals; and on analysis, in America, has been found to contain a much larger proportion than the Jersey mineral, of which some specimens yielded only about forty per cent. of the phosphate of lime, while the Crown Point mineral gives eighty per cent. of that substance, free from chalk, containing only a small amount of quartz in grains, and of the fluoride and chloride of lime. It is very soft, and pulverizes easily, and is more readily dissolved than the Jersey variety. It can be delivered in London, in the rough state, or powdered ready for use, as may be thought most desirable. By single-horse power two tons a day may easily be ground.

4. The price at which the Jersey phosphate was first offered was five guineas per ton; but its interest immediately ceased, in a commercial point of view, when the importers, on fallacious grounds of supply and demand, injudiciously raised the price to £7, forgetting that there were already other forms of phosphate of lime in this country available to the English farmer. It is

now fully believed, by moderate and intelligent Americans, that the United States phosphate can be afforded in the English market at such a price as will render it a cheap fertilizer; and, as it can easily be reduced to powder, its value cannot be doubted, provided it be treated with sulphuric acid, and thus rendered suitable as a manure for those crops for which phosphate of lime has been found, by experience, to be advantageous.

5. Professor Johnston, of Durham, to whose personal visit to the United States we probably owe the attention thus paid to this mineral, occurring so abundantly in that part of the world, remarks:—"American farmers in general have not the knowledge to appreciate the value of such a manuring substance as this, nor the ability to purchase it when manufactured into super-phosphate of lime; the discovery, therefore, will be a boon, for the present, to both countries. It will make more abundant and cheap the means of fertility which our soils require; while by supplying a new article of traffic only saleable in Great Britain, it will form a new bond of connection between our kindred nations."

WHAT GIVES VALUE TO THE LAND OF ENGLAND?

SUCH is the question asked by an intelligent correspondent in one of the late English journals; and as most of our readers are land owners, and therefore directly interested in understanding what it is that gives value to land, we think we cannot do better than lay before them the answer that is given to the question:—

"Why, I ask again, is the price of land high in England generally? Why, evidently, not because the land itself is better than in other countries, but *because a ready market for all sorts of produce is within reach*, by means of roads, canals, railroads; that labor is cheap and abundant; that life and property are secure; that we have close at hand the means of grace, and education, and improvement; in short, that circumstances are favorable for such a life as shall be convenient and desirable here below, and shall prepare us for eternity hereafter. Thus the same land may be almost worthless or very valuable, according as it is well or ill provided with these things."

By some of our readers it may be said that there is here one requisite that cannot be obtained by them—that labor cannot in this country be "cheap and abundant." Directly the reverse is the fact. High-priced labor is cheap labor, while low-priced labor is dear labor. The Hindoo who works for a dollar a month, out of which he finds himself, cannot compete with the well-fed laborer of Alabama, nor the well-fed, well-clothed and well-educated workman of Lowell. It is when the labor is largely productive that the laborer is well paid; and high as may be his wages, his labor is cheap by comparison with the unproductive labor of other countries. It is, too, when labor is largely productive that labor is abundant, because to render it thus productive it must be aided by machinery; and we know well that a single steam-engine will do more work than a hundred, or even five hundred men. The reaping machine enables one man to do the work of ten; and the threshing machine and the grist-mill dispense with labor the performance of which would require armies for its execution. With each such machine labor-power becomes more abundant, labor becomes more productive, and land becomes more valuable. An acre of flax land in Belgium commands as much rent as would purchase eight or ten acres of cotton land in Alabama. Why? Because the flax land has a "ready market for all sorts of produce within reach," and the cotton land has no such market. An acre of wheat land in England rents for as much as would purchase five, six, or eight acres of as good land in Wisconsin. Why? Because the former is near market, and the latter is distant from it; and the farmer knows and feels that he it is that must pay the cost of going to market. THE

FIRST TAX TO BE PAID BY LAND AND LABOR IS TRANSPORTATION. How long will our farmers and planters insist upon paying the enormous amount of taxation that they impose upon themselves, by failing to make a market on the land for the products of the land? How long will they continue to exhaust their land and themselves, and deprive themselves of "the means of grace, education and improvement," that are so difficult to obtain when men are widely scattered, and so easily obtained when they are enabled to combine their efforts for obtaining them?

A VISIT TO THE COAL REGIONS OF PENNSYLVANIA.

A CORRESPONDENT in Philadelphia furnishes *The Plough, the Loom, and the Anvil* with an exceedingly interesting sketch of a "Week's Recreation" in the coal region. We almost regret, when such matters offer, that our design will not admit the insertion occasionally of articles wandering slightly from the great objects to the advancement of which we are pledged. Like Ulysses, it would be agreeable to lose ourselves momentarily in the isle of Circe, or to taste the fascinating lotos; but life is in earnest, and it will not do to be drawn away from its practical purposes by the charms of inactive relaxation. We are consequently obliged to confine the extracts we propose to make from our correspondent's diary to those portions which have more direct reference to the mining interests of our land:—

"POTTSVILLE.—We ascended, on the day after our arrival, a hill on the north side of the town, and examined the new Court House and the rising walls of the new Jail. Pottsville, it seems, is in future to be the county town, as it should have been in the first instance. The first mine which we visited we found on this hill, with a simple crank for two horses, and a windlass, to draw up the coal from the mine. This, perhaps, is the simplest form of power applied to get out the coal. The next is the direct power of mules or other animals, or men, to draw it out; and the next is doubtless the stationary steam-engine, which we afterwards found at every mine in Schuylkill and Carbon counties. The view from the top of this hill is very fine, but the one from the hill directly opposite, on the south side of the town, is still better. In fact, there is nothing more varied than the prospect of hill after hill and dale after dale (they scarcely amount to valleys) which compose the surface of the region. The Hogarthian curve of grace and beauty is finely illustrated in the *belle scène* of this variegated country. It has much the physical appearance of portions of South Wales, except that the valleys are not large enough, nor the land sufficiently cultivated."

Our traveller finds ample room for moral education among the mining population, and suggests the establishment of "reading rooms, lyceums, circulating libraries, and temperance societies" in their midst. A capital idea, but who is to carry it out? He states, however:

"It is very true that a comparatively great change has taken place in the practices and habits of the contractors and miners since the visit, many years ago, of the renowned Graham, who taught not only abstinence from alcohol but from all animal food. At that time, as we were informed by an intelligent gentleman at Summit Hill, they were in the habit of dealing out, per order of the contractors, 'six nippers' a day. The rule now is, that no rum shall *enter* the mines. We believe this rule is nearly universal, though very often evaded by the workmen."

Of the machinery and modes of transporting coal from one point to another, we have the following description:—

"The whole range of the mining operations, as well as the character of the

coal, in Schuylkill county differ very materially from those in Carbon. In the latter, especially at the Lehigh mines, the locomotive power is gravity, acting by means of inclined planes. Loaded cars move off majestically and gracefully from the mines, and run the distance of six or seven miles with no other power to propel them. The grade is adapted to moderate motion, say ten miles an hour. A man accompanies a long train of cars, and, by means of the brake, controls very effectually the velocity of their motion. Empty cars which leave Mauch Chunk are drawn up what is said to be the longest inclined plane in the world—2,462 feet, we believe—by means of a steam-engine stationed at the top. Bands of steel, three eighths of an inch in thickness, and eight inches wide, extend down the plane, and are wound at the upper end around 30 feet cylinders by means of the steam-engine. A car attached to the lower end is placed behind a long train of cars, and literally pushes them up. Passengers are in this way driven up to 'Mount Pisgah,' where they enjoy one of the finest panoramic views in the county. The Delaware Water Gap, between which is Schooley's Mountain in the distance with Mauch Chunk lying cozily at your feet, the blue mountains opposite, and a beautiful valley, along whose side you glide from Mount Pisgah to the mines by an unseen and apparently spiritual power, form a combination of circumstances calculated to make one feel that he is in fairy land. Another summit, however, has to be mounted before you arrive at the town that bears that name. The whole of the movements of cars, loaded or empty, except the mere drawing them out of the mines, and up these two planes, is obtained by these gentle grades. These grades, by the way, forcibly illustrate the facility with which men do their duty when the *will* responds to it. These grades act like the will upon man, and gravity moves the cars, when immense power would otherwise be necessary, as is the case in other districts, to move the coal towards its various points of destination. One hill in this region has been literally uncapped. Hundreds of feet of earth have been removed from its mighty top, and the coal vein laid entirely bare. It is now, and has long been, quarried in open day-light. This also distinguishes the Lehigh region from the Schuylkill and other localities. In those places the rule is to begin to work the vein at the foot of the hill, and drive upwards. For this purpose, long shafts have frequently to be dug, in order to strike the vein, care being taken, if possible, not to go below the level of the ground in the valley, that the water in the mine may run out; otherwise expensive machinery will be necessary to pump up the water. Mines, indeed, sometimes become valueless on account of the expense necessary to keep them dry. In some cases, long tunnels are dug to carry off the water at a lower point.

"It is a remarkable fact, in reference to these immense veins of coal, whose thickness varies from three or four feet up to fifty, that those on the northern side of the hills are generally defective, while those on the southern side have the best coal, and are more profitable. They appear to form in the Lehigh region what is called a saddle, and rise from the valleys, which they cross, towards the tops of the hills, when they either pass over and join others on the opposite side, or, as is the case at the Summit, 'crop out' on the top of the hill. The vein, however, will be found on the other side just the same. There are sometimes four veins, one below the other, at distances varying from ten to several hundred feet.

"The process of breaking the coal is a little curious. It passes between two large cylinders, on one of which there are teeth, and on the other corresponding depressions. By a single passage through, the coal is broken into all

possible sizes. It then passes through screens formed in cylinders, like the screens at grist mills through which flour is bolted. The coarser screens allow the largest and the finer only the smallest coal to pass through. The sizes are thus accurately graduated. Boys sit at the *embouchures* of these screens and pick out the slaty portions, while men are continually wheeling away the finest part of the screenings, which have no value, and constitute large hills of refuse dirt, which, however, will doubtless some day, by some enterprising Yankee, be found to be useful. It does not pay at present to carry this fine coal to market.

"In Europe, particularly in Wales, the land around the coal and iron mines is in a high state of cultivation, and the Vale of Glamorgan is the most celebrated in the world for its beauty and the extent of its agricultural products. In our coal region, on the contrary, nature's majestic forests, or the small growth which follows the taking off of the large timber, are seen up to the hill-tops as well as in the vales. Wood is, in fact, in great demand for the mines as supports, and is daily becoming dearer in all this region. The wood, while standing, will now sell for from \$60 to \$120 per acre for purposes connected with mining; and as there are no provisions for its reproduction, it will in a few years become very scarce and dear. In the mean time, resort will probably be had to iron bars and plates for the same purposes as wood is now used; in fact, iron plates are now used in the slides and tunnels of the coal, both in and out of the mines.

"There is a prevalent opinion, both in our coal region and in Europe, that coal lands are unproductive. In speaking with an intelligent gentleman at the Summit, he remarked that the lands will produce nothing, on account of the presence of the coal, and added, on seeing some potato patches in a good state of cultivation, 'except potatoes.' These the Irish laborer will cultivate wherever he is found. Now it is well known that the potato requires the richest land,—land in which wheat and all the *cereal*ia will grow,—and is itself one of the most nutritious of vegetables. The Irish laborer is wise, and produces an article that is more nourishing than any other which can be produced on the same space of ground. Besides, the presence of large timber is proof positive of the richness of the soil, and its ability to produce both corn, wheat, rye, potatoes and other important agricultural products. Indeed, several farms in a good state of cultivation prove that the land is good. Why should it not be cultivated, and the food consumed by the miners in their underground work be produced on the surface of the same land? In this way the producer and consumer would be brought together, and the products of both mines and farms would assume a higher value. CATO."

HOW MANUFACTURES TEND TO INCREASE THE PRODUCTS OF AGRICULTURAL LABOR.

WE invite to the following paper the attention of our agricultural readers, and beg at the same time to remind them that the consumption of iron for the preparation of machinery for the *production, conversion, or transportation of the products of the earth*, is now less by about two hundred thousand tons than it was four years since, although the population has increased in that time not less than three millions:—

"I was pleased to find here a cheap Steam Engine on wheels, (four-horse, costing \$325, all appliances included,) from the manufactory of Hoard & Bradford, Watertown, Jefferson Co. I visited and spoke of their works some fifteen months since, and I learned to-day that they have been unable to fill

their orders promptly at any time during the past year, owing to the continually increasing demand, although they have meantime quadrupled the number of their workmen. They make engines with boiler, &c., as low as \$75, (half-horse,) requiring about as much fuel as a parlor fire, and from that up to six-horse, (\$400.) The one here exhibited can be guided to the barn or stack to thresh out and winnow the grain, and when that is done will propel itself to the field in quest of a job of stump-pulling; thence will travel back to the house and there saw up the winter's wood about as fast as a man can hand it along, beguiling its leisure moments by pumping water for the cattle, churning, turning grind-stone, hanging the brass kettle over the kitchen fire, and rocking the cradle. Of course I speak only of the power; to apply it to all these various uses, other machinery is requisite. But I have seen enough to convince me that for all purposes where essentially stationary power will answer, steam is already cheaper for the farmer on a liberal scale than horsepower, and that it is a shameful waste of human labor to cut up a pile of wood with an axe. For ploughing, transportation, and such essentially locomotive uses, I think cattle must still be employed until the time (which cannot now be many years ahead) when the steam engine shall be superseded by some agency or motive force which does not so rapidly exhaust or consume the material or elements of its power."

SPEECH OF THE HON. EDWARD EVERETT, AT LOWELL, MASS.,

On Wednesday, September 24th,

ON THE OCCASION OF THE UNION CELEBRATION OF THE MIDDLESEX AGRICULTURAL SOCIETY, AND THE MIDDLESEX MECHANICS' ASSOCIATION.

MR. EVERETT spoke in reply to the compliment of the presiding officer, substantially as follows:—

I deem the great objects of the Society and those of the Mechanics' Association, whose members unite in this festival, of the utmost importance. They comprehend no small part of all that has been done for the culture and civilization of man. We do not enough reflect how much we owe to the arts of the husbandman, the mechanic, and the manufacturer; how much they do for us all, every day of our lives. Strip society of all that these arts have done for it, and you reduce man at once to pastoral and savage life. You turn him out, like the wandering Arab or Tartar, to roam with his flocks and herds over arid deserts and dreary *steppes*; or like the aborigines of this continent, to earn a precarious living by hunting and fishing.

But although reflecting persons feel, when they consider the subject, that it is the arts and industry of the husbandman, mechanic, and manufacturer, by which man has been elevated in the social scale and brought within the reach of moral influences, we do not all realize that we have not yet gone as far as we can or ought; that, vast as the progress is which has been made in the cultivation of the useful arts of life, particularly of late years, we are still, no doubt, in the infancy of improvement; that man always must be in this respect, in a state of infancy, because there are absolutely no bounds to his possible progress. The individual man grows old, but the race does not grow old; a tide of new life is for ever pouring in; fresh minds start into being, adding to their native powers all the advantage of the teachings of their

predecessors; and thus keeping the race (where no causes of degeneracy exist) always young, vigorous, and progressive.

It has ever been a favorite idea of mine, sir, that we live on the verge of new improvements and discoveries equal to any yet made; that in the earth we tread, the air we breathe, the water we drink, and the substances of all kinds—mineral, vegetable, and animal—which we daily handle, there are the materials and elements of new discoveries, which, when made, will astonish the world. Yes, sir, the quarry and the forest—the soil and the air—the streams and the winds, are full of elementary principles and hidden arts, and unseen adaptations to human comfort; they are replete, bursting, I might say, with great truths. The intelligent artisan—I appeal to the worthy President of the Mechanics' Association, if he has not experienced the emotion—the intelligent artisan can almost hear them address him, like the imprisoned genius in the Eastern tale, imploring him to touch the spring—to speak the magic word—which shall call them into being.

I would apply these remarks to the husbandman, as well as to the mechanician, although, as you told us, sir, in your instructive discourse, from the earliest records of our race, the calling of the husbandman is coeval with man; and although the farmers as a class are said to be rather disposed to adhere to old ways. Yet, sir, I have no doubt that in the several departments of husbandry, in what relates to climate, soils, manures, animals, implements, seeds, roots, grains and grasses, vast improvements are yet to be made; improvements equal to what has been witnessed in any other branch of industry.

You will be surprised perhaps, sir, to hear me express the opinion that any improvement can be effected in reference to *climate*; that being a thing outside, beyond, above us, which we must take as kind Providence pleases to send it. But much can be done, sir, to modify the influence of climate. In the neighborhood of large towns, (and the railways are constantly enlarging this neighborhood,) a very great business is carried on in the way of raising fine fruit—particularly grapes and flowers under glass. I am afraid to repeat the estimates I have heard on this subject. It is a growing business; and by the use of hot air, hot water, and steam, it will be carried a good deal farther. I have not the least doubt that fuel enough is burned *to waste* annually, in every farmer's house in Middlesex county, to heat a conservatory, which, with careful culture, would furnish grapes in a single year enough to pay the outlay of the building.

Sir, the great subject of shelter (which is the question of climate in another shape) has not been enough considered. Whenever you cut down a large piece of woodland, you change the climate of the tract of land which was shielded by it from the prevailing winds. When you clothe the summit of a hill with a thriving plantation, you make a milder climate for the slope which is thus sheltered. I have seen tender shrubs killed by removing a building which protected them from the northeast; and every one knows that delicate fruits rarely fail to ripen in a thickly-built city, which are very uncertain in the country. In short, sir, if any one doubts the extent to which climate consists in shelter, let him remark the difference between the north and the south side of a high compact wall, when the snow is going off in the spring. You will have a little glacier one side of the wall and dandelions in blossom the other.

I saw the other day at Nahant a very striking illustration of the effect of shelter in producing a change of climate. On the highest part of that pen-

insula, a spot over which the northwest wind in winter comes charged with needles' points and razors' edges, and where, in the spring, the east wind distils from his dripping wings a chilly dampness that carries a raw feeling to your very bones; I say, sir, on this spot, and on the northern slope of it, the perseverance and skill of an intelligent gentleman has created an entirely new climate. He has clothed the most elevated portion of the promontory with trees for shade. His cottage is hidden in a grove of his own planting, and that commenced, I think, less than twenty years ago. On the northwest slope of his grounds he has a garden filled with the choicest fruits of the season; not raised under glass, but in the open air, and on standard trees. I saw the most beautiful pears I have seen this season, with peaches, plums, and apples. Well, sir, this, as I said, has not been effected by glass, by furnaces, or by hot walls; but by shelter, and not much of that. Rough bats of wood, higher or lower, as required, some of them twelve or fifteen, others twenty or twenty five feet high, nailed up an inch or two apart; these have produced the mighty effect and produced the climate of Provence on the cliffs of Nahant. A solid fence would not stand the mighty power of a northwester on this exposed spot; the thin slats a few inches apart stand very well, and seem to answer as effectually.

Well, my friends, you will be ready to exclaim, "Oh, yes, this is a single case—a very special instance in which, by a great outlay of money, a desired result has been produced on a small scale." I have no doubt Mr. Frederick Tudor (I trust he will pardon me for making free with his name) has expended a good deal of money on his house and grounds at Nahant, but it did not strike me that the fence of slats—the main instrument of effecting the change of climate—could have cost a great deal. I think any farmer who lives near a saw-mill could, for five dollars, buy slats enough to do all that has been done by Mr. Tudor in this respect.

And now, sir, having alluded to this gentleman's operations at Nahant, and the expense bestowed upon them, I will observe that they furnish another striking illustration of what has been done in the way of improvement, by intelligence and perseverance, in our own day and neighborhood. The gold expended by this gentleman at Nahant, whether it is little or much, was originally derived, not from California, but from the ice of our own Fresh Pond. It is all Middlesex gold, every pennyweight of it. The sparkling surface of our beautiful ponds, restored by the kindly hand of nature as often as it is removed, has yielded and will continue to yield, ages after the wet diggings and the dry diggings of the Sacramento and the Feather rivers are exhausted, a perpetual reward to the industry bestowed upon them. The sallow genius of the mine creates but once; when rifled by man, the glittering prize is gone for ever. Not so, sir, with our pure crystal lakes. Them, with each returning winter, the austere but healthful spirit of the North,

— "with mace petrific, cold and dry,
As with a trident smiles and fixes firm
As Delos floating once."

This is a branch of Middlesex industry that we have a right to be proud of. I do not think we have yet done justice to it; and I look upon Mr. Tudor, the first person, I believe, who took up the business on a large scale, as a great public benefactor. He has carried comfort in its most inoffensive and salutary form, not only to the dairies and tables of our own community, but to those of other regions throughout the tropics; yes, sir, to the farthest East. If

merit and benefits conferred gave power, it might be said of him with more truth than of any prince or ruler living,

"Super et Garamantas et Indos
Proferet imperium."

I think, my friends, you will not be sorry, in reference to this product of our own Middlesex, to hear a little anecdote of what once happened to myself. When I had the honor to represent this country at London, I was a little struck one day, at the royal drawing-room, to see the President of the Board of Control (the board charged with the supervision of the government of India) approaching me with a stranger, at that time much talked of in London—the Babu Dwarkanauth Tagore. This person, who is not now living, was a Hindoo of great wealth, liberality, and intelligence. He was dressed with oriental magnificence. He had a rich Cashmere shawl, held together with a large diamond brooch, on his head, by way of turban; another Cashmere round his body; his countenance and manners those of a highly intelligent and remarkable person, as he was. After the ceremony of introduction was over, he said he wished to make his acknowledgments to me, as the American Minister, for the benefits which my countrymen had conferred on his countrymen. I did not at first know what he referred to; I thought he might have in view the mission-schools, knowing as I did that he himself had done a great deal for education. He immediately said that he referred to the cargoes of ice sent from America to India, conducing not only to comfort but health; adding that numerous lives were saved every year by applying lumps of American ice to the head of the patient, in case of high fever. He asked me if I knew from what part of America it came. Well, sir, it gave me great pleasure to tell him that I lived, when at home, within a very short distance of the spot from which it was brought. It was a most agreeable circumstance to hear, in this authentic way, that the sagacity and enterprise of my friend and neighbor had converted the pure waters of our lakes into the means not only of promoting health, but saving life at the antipodes. I must say I almost envied Mr. Tudor the satisfaction which he could not but feel, in reflecting that he had been able to stretch out an arm of benevolence from the other side of the globe, by which he was every year raising up his fellow-men from the verge of the grave. How few of all the foreigners who have entered India, from the time of Sesostris or Alexander the Great to the present time, can say as much! Others, at best, have gone to govern—too often to plunder and to slay. Our countryman has gone there not to destroy life, but to save it; to benefit them first, while he reaps a well-earned harvest himself.

And thus having got you, my friends, to the banks of the Ganges, in my rambling discourse, I am going to bring you here to Middlesex—to Lowell itself—by a short cut, and furnish you at the same time another illustration of the progress of the arts you cultivate, and of that connection between the husbandman and the manufacturer which was so ably set forth by the orator of the day. You are all aware that great quantities of coarse cottons used to be brought thirty years ago from India. It was an important branch of commerce: the advertising columns in our newspapers were filled with long lists of hard Hindoo names of goods now seldom heard of. Of the younger portion of the company, few, I suppose, have ever seen a piece of this India cotton, such as was formerly imported in great quantities. I will presently show you a specimen of it, bought and worn by me forty-four years ago; but I must first tell you on what occasion, and for what purpose.

In the month of February, 1807, I was sent for a few months to the acad-

emy at Exeter. There was at that time among the pupils of the academy a military company, of which all the boys who were emulous of serving their country in arms as well as arts were members. I joined it, sir, and was tolerably successful as a soldier. I did not get to be a commission or even a warrant officer; but I rose in due time to be a right-hand man, or rather boy, of the rear rank of the fourth section, which, for a red-haired urchin under thirteen years of age, and standing four feet six in his shoes, was thought to be doing famously. Well, sir, our corps had a uniform, and that uniform was a jacket and overalls of plain white India cotton. It was intended, I suppose, by this pacific garb, to tame down the terrors of our array; to smooth, in some degree, the wrinkled front of grim-visaged war; and to show that, even while preparing for its dire summons, we were still willing to put on the vestments of white-robed peace. At any rate, sir, we wore white jackets and trousers; and here is my jacket, which has, by I know not what domestic chance, been preserved. [It was held up by Mr. Everett, greatly to the amusement of the company.]

Here it is, sir, an authentic specimen of the India cotton once brought in great abundance to this country. The name of such a piece of goods is unknown to me; whether it is from the piece of Baftas, or Saunahs, or Beerboom Gurrahs, or Mow Mahmoodies, or Gutchpoor mammicollies, I pretend not to say. I can only say that they used to come by the ship-load, and specie by the ship-load went to pay for them. It is, as you see, sir, coarse as hop-sack; you could almost shoot peas between the threads. If you ever wove a piece of cloth like that at Lowell, you would think it dear at five cents per yard; and yet I assure you that, to the best of my recollection, this very piece cost at retail, when it was bought in the country forty-four years ago, twenty-five cents per yard!

Now, sir, compare the cloth of which this poor little jacket is made with the cottons furnished at a third of the price, at the present day, by the manufacturers of Middlesex, and see the progress of the useful arts. Then remember that the cottons of India were to be paid for in specie, the least advantageous form of trade; and that the cottons of this country are manufactured from a material which grows on the soil of the United States, and is woven in your own looms by those who eat bread raised by your own husbandmen. Recollect all this, and you will, I think, understand a little better what Middlesex manufacturers have done for Middlesex husbandmen; and what both, while they sustain each other, have done for the rest of the community.

AGRICULTURE.

PRIME of the arts, spring of domestic ease,

Pride of the earth, and patron of the seas!

Kind Agriculture, give thy potent aid

To spread thy fields where gloomy forests shade;

"Where savage men pursue their savage prey,

Let the white flocks in verdant pasture play;"

"From the bloom'd orchard and the showing vale,

Give the rich fragrance to the gentle gale;"

Reward with constant boon the laborer's hand,

And shed thy clust'ring bounties o'er our land.

Westchester's sons spurn not your rocky toil:

Your country's glory is a cultured soil.

MORRISANIA.

THE ANNUAL FAIRS OF 1851.

ANY custom having for object closer unity among those classes whose interests and labors point to common ends, should be encouraged and furnished with all the sanction of prescription. Not that the offensive and defensive alliances which are becoming the vogue among laborers and mechanics, as an imaginary protection against the oppression of employers, and the competition which development and improvement are constantly introducing into the arts, are deserving of confidence; for we cannot help regarding the tendency of such associations as narrow and exclusive, and leading to a most disastrous derangement of the social system. We refer to the peaceful contests of skill, the admeasurements of progress, the inter-communion of ideas, the exchange of practical suggestions, which are annually elicited by the State and county gatherings in this country, whether of the producers of raw material or of those whose manipulations convert the growth of the soil into the direct or indirect means of feeding, covering, sheltering the population of the globe. Theories, of which ninety-nine out of a hundred are not worth the paper that perpetuates them, have no admission at these popular councils. The ideas are strictly inductive, in most instances the inferences of severe experiment, and have a value both for the giver and receiver which any figure preceded by a dollar mark is quite inadequate to express. This is preëminently apt to be the case in agricultural meetings. The farmer joins his neighbors at the end of what may be termed the rural year, and together they reap the ripe harvest of experience, the "grain in the ear," the practical teachings and results of the season, which the subsequent long leisure of winter enables them to mature and prepare for experimental application. Not only so. The occupation of the cultivator tends to isolate him from his fellows. The major part of the year is necessarily devoted to farm labor. The intervention of distance forbids the employment of unoccupied moments in neighborly discussions with other farmers of his district. Unless there is a definite time, so arranged as to fall upon the season when the farmer is comparatively idle, there is small likelihood of the advantage of a social interchange of views being attained at all. The attraction of these assemblies is heightened by the presence of the actual and successful results of cultivation and stock-growing; and there is every inducement laid before the visitor to participate regularly as the opportunities recur, in the advantages and pleasures and humanizing effects of such periodical intercourse.

There is one feature, indeed, that might, we think, be of great additional value, if universally adopted and heartily followed out. We would have the county or State fair represent all the mechanical, scientific and practical departments of skill and labor, as well as the agricultural. All men, immediately or mediately interested in production, should embrace these occasions of debating and developing their intimately interwoven interests; of ascertaining by what means all branches of industry may advance abreast, and therefore with the largest amount of common profit; of removing baseless prejudices and destroying the senseless jealousy which arrays the workers at the Loom and Anvil against their brother at the Plough. When this improvement in these already immensely useful organizations shall be generally introduced, we shall arrive at the greatest possible good to the greatest number, which is the aim of *all* social organizations.

The value of such institutions in the eyes not only of the planter, but of the statesman and politician, is annually rising. The agricultural and planting interests of the country are so incomparably greater in their numerical importance, if merely counted off by the head and estimated as a political engine, as to arouse men of all classes at last to a just sense of their importance. As the body of growers become more and more addicted to association and co-work, not only among themselves but with the mechanical and manufacturing classes, their influence will extend, and perhaps make its weight sufficiently felt to secure some long-desired advantages from Government. The time has come for the planters and farmers, South and North, to insist on the establishment of a

National Bureau of Agriculture. The value of such an executive department as a receiving and disbursing agent of practical information—a medium for the interchange of ideas, and for obtaining the *matériel* for an annual volume, embodying the results and deductions of experiment not only in this country but in others governed by similar thermometrical conditions—can hardly be exaggerated. The action of the various larger or smaller societies could not have a happier direction than toward the attainment of this central distributing reservoir of agricultural knowledge.

The convention and exhibitions, State and county, have been unusually interesting this fall. The improvements evinced in the modes and applications of culture have gained decidedly in ratio upon those of previous years. It has been remarked that raisers of stock make an unprecedentedly fair showing. The stories of enormous and healthy crops have been confirmed. The samples of vegetables and grains produced have been remarkable. Agricultural implements are found to be improved, and more favorably commended to practice, by the combined wit and ingenuity of the farmer and mechanic. The whole summing up of the year's business evinces an obvious growth of interest and intelligence on the part of the rural population. The attendance of the eminent personages of the land has been larger, and their sympathy with the wants of the farmer more cordially and unreservedly uttered. The noted names of Gen. LEWIS CASS, Hon. DANIEL WEBSTER, Hon. STEPHEN A. DOUGLAS and Gen. JOHN A. DIX have been among the officials and dignitaries who have done homage to the office and dignity of the farmer. We only regret that the practical design of our magazine forbids the reproduction of some of the eloquent remarks delivered by these and other gentlemen before several large agricultural conventions.

THE MACON CONVENTION.

WE are rejoiced at any movement among the people at the South which holds out the slightest promise of developing their idle resources, and employing the materials and advantages they possess for commercial intercourse with foreign nations. The Southern States have never realized their own strength. Nature and fortune have there been prodigal of good gifts. Soil, climate, the number and direction of the estuaries, the unequalled stretch of coast, the numberless harbors and sea-ports, point clearly to an endless production of the great staples, and boundless facilities for exchanging their surplus with the productions of other lands. Cheap labor, abundant natural power to drive machinery, and navigable streams affording the means of easy inland communication, as clearly indicate the matchless opportunities presented for the conversion of the staple crop, without the deductions now made from its value in favor of the agents of transportation and sale. Commerce and manufacturing are alike invited and encouraged by what nature and circumstances have contributed to do for the dwellers on the soil; and yet the South has hitherto allowed itself to be mainly dependent on the Northern States and England for both those important interests.

We are rejoiced, we repeat, to observe that there is a growing indisposition to submit to this unnecessary commercial and industrial dependence. A Convention of Cotton Planters was summoned to meet at Macon, Georgia, on the 27th of October, to take into consideration the ways and means of vindicating Southern interests from their present subordinate condition, and placing them on a sounder basis for the future, beyond the reach not only of foreign speculators, but as far as possible of all the ordinary accidents and vicissitudes of trade. We hope a great deal from the deliberations of this body. With a common evil distinctly before them, and affecting common interests, there is every reason to believe the consultations will terminate in devising an effectual remedy. We can hardly believe the good sense of the Convention will be misled by visionary and impracticable schemes. Such an one was contained in the call for the meeting

issued by a highly respectable body of planters in Florida. They proposed the formation of a "Cotton Planters' Association," an immense commission partnership, having branch houses at each of the important cotton-shipping ports, who should receive all the cotton of the South; advance upon it liberally; sell it under no circumstances for less than eleven cents per lb, even if they should have to hold it for a year or two to obtain that price; and thus equate the value of the annual crop, so as to afford the planter a certain return for his capital and labor. Practice must speedily knock any such plan in the head. The \$20,000,000 embarked in it would melt rapidly away, and prove utterly inadequate to the immensity of the design. The planter who should part with a portion of his wealth to establish such a concern, would have the rest absorbed in efforts to sustain it; and three years would superinduce a general bankruptcy more ruinous to all hands than the crash of 1836-7.

Nor would the success of the enterprise answer the objects of its inventors. Stringent as the monopoly might be, it could not escape the over-mastering influence of consumption. The laws of trade are not arbitrary, that the will of man may suspend or abrogate them. They are as immutable as the essential laws of humanity, and the consent of all the cotton consumers in the world, supposing, and the mere supposition is absurd, that it could ever be obtained, would be insufficient to fix the price at an invariable level.

In fact, it is only upon the principles which the PLOUGH, LOOM and ANVIL has been several years advocating that the objects proposed by the Convention can be arrived at. They must import the consumer and cease to export the staple, before they can exercise the slightest influence over prices. The enormous waste in the way of commissions, for sales and commissions, for guarantees, exchanges and freights between Southern and Northern ports, brokerages and reclamations, would all be saved by the spinning of cotton yarns and the weaving of cotton cloths in sight of the cotton-fields. To this object, therefore, should all the deliberations of our Southern friends be mediately directed. It will take time, and it will take tariff, to place the manufacturing interest on a remunerative footing. But all difficulties will give way to a concentrated and persevering effort; and in the mean time, a large measure of relief may be obtained by the establishment of direct commercial relations with the foreign market, the creation and employment of their own shipping, and a dispensation with the agency which New-York now enjoys in the transshipment of the staple. In this way, until they shall be enabled to retain within themselves the profits of conversion, they may at least save the profits of transportation, and be so far richer and stronger.

We point out the only course for relieving the planters' embarrassment. Other means may be tried, but they can only consume time and money ill spared. To this they must come at last. Mills must be built, and ships launched, and eventually the Southern States of our Union will clothe the world without any thanks to Northern or British capital. Georgia is already leading the way in the right direction; and we are gratified that the cotton parliament has been convened at Macon, because the members will see in partial and incipient practice what we are urging as a wholesome general policy.

Our December number will contain a full account of the sayings and essayings, doings and things proposed to be done by the Convention.

THE POTATO.

SUCH of our readers as will refer to the March number of the current year will find a valuable letter from Senator Nall on a method of cultivating the potato, by which it is supposed the rot may be avoided; but as possibly some of them may be like ourselves somewhat careless, and the paper (as is always the case with us) not at hand when most wanted, we will repeat as briefly as we can the substance of the Senator's communication.

The land was prepared as usual; laid off in rows two feet apart; manure put in the

furrows; the sets dropped and covered in the usual way, and the surface left level; machined straw was then applied, and carefully spread over the whole, to a depth of six or eight inches; crop planted early, to secure the advantage of spring rains. The ground beneath the straw continued mellow and moist throughout the prevalence of a prolonged drought; the yield was at the rate of 300 bushels per acre, and the tubers were of the very best quality, though the crops on the adjoining farms were nearly annihilated by the rot. Though we have a list of many thousand subscribers, we have as yet heard from but two who have made trial of Senator Naill's mode of cultivation—Messrs. Skinner and Sommers, of Prince George's county, Maryland. Of the quality of Mr. Skinner's crop we speak from personal observation—finer we never saw; and what struck us as a peculiarity, was their singular smoothness, being quite as much so as apples. Mr. Sommers laid his potato cuttings upon unploughed, unprepared ground, merely covering them with straw, and his crop, we are informed, was fully equal to Mr. Skinner's. Both gentlemen are convinced that they pursued the true method of cultivation, and intend to stick to it.

Are not these results confirmatory of Dr. Baldwin's theory? And do they not suggest the propriety, in some districts, of using the straw to shade the land, just as it comes from the machine, without carrying it to the compost-heap?

OUR CORRESPONDENTS.

A COUNTY FAIR IN INDIANA, &c.—*Verité* writes from La Porte, Indiana, and discourses on this wise, in reference to agricultural showing at that place:—

"There was an exhibition of grain, vegetables, fruit, and horticultural productions, that would have done credit to any county in any State of the Union in which such products are grown. In confirmation of this I submit facts. One of our leading agriculturists attended the last great Fair held in Cincinnati one year ago, which was a *State* affair. He carried with him some of our best specimens, of his own raising, of apples and pears; for both he took first premiums. He says the exhibition in that city, taken as a whole, was inferior to that of La Porte. But further, this same gentleman attended the recently held Fair in your great State at Rochester, in the best region in the State for fruit, I believe. Much has been said in the *city papers* about the admirable exhibitions of the country; and we hope it was all *true*. But our friend who is a connoisseur in such matters, and whose name, were I to mention it, would be a guarantee of what I say, tells us that the exhibition in La Porte, of the articles of which I write, was *superior* to the Rochester exhibition. Be it remembered the country about Rochester was settled upwards of fifty years since, or before 1800. The La Porte region of country is a new settlement, in its *teens*. Another gentleman was present at the La Porte Fair, who had been present at the *Michigan* State Fair, held at Ann Arbor. He asserts of it that it was inferior to our Fair, in all *similar* articles exhibited. Methinks you are saying to your-

self, while reading the above, *What boasting!* Sir, 'I speak what I know, and testify what I have heard.'

"This State of Indiana has formed a State Agricultural Society, to be held annually at Indianapolis. Every county in the State is called upon to form auxiliary county societies. The movement will, we trust, give a spur to improvements in agriculture and horticulture, as also to improvements in various kinds of stock; especially to the rearing of sheep. It is time our beautiful region of country was better known abroad. Its locality and other circumstances seem to have kept it out of sight heretofore; its millions of bushels of wheat and corn for the last three years have gone to New-York market under the name of Michigan, Illinois, and Chicago wheat and corn, and often in the shape of Rochester flour and meal. Those misnomers for Indiana grain must soon cease, and our own cognomen be adopted. The Buffalo and Mississippi railroad will be completed this present autumn, thus far, and then our La Porte wheat, corn, hogs, beef, merchandise, &c., will go from, and come to, La Porte *direct*. To make a trip then to the city of New-York and return, will be the business of ten days or less. We now have two fine hotels in the state of erection, for the comfortable accommodation of visitors who may wish to see our rich and beautiful country. This country, which was in the possession of the Indians twenty years ago, and which contains about four hundred square miles, has now a population of about fifteen thousand inhabitants. The town of La Porte contains about twenty-five hundred

inhabitants. The settlement of this country is worthy of notice; it has been entirely different from almost every other new country in its first class of settlers with which I am acquainted. Most new countries have been settled first by pioneers, who were ever on the move, and who were followed by permanent settlers, bringing with them Christianity and sociability. But La Porte region was in the first instance settled by an enterprising mass of settlers from almost every State in the then Union. You may readily suppose that such a class of settlers would bring all the means of making, not the wilderness, but the prairie landscape, 'bud and blossom as the rose.' It is true, as in every other part of our widely spread country, its population is restless; they would go to the end of the world to accumulate wealth; they have done so. From where was the Pacific shore settled? *Where?* But again, I must inform you a little more about the prosperity of our region. Every means have been used, as far as practicable, to introduce the best fruit in every variety to which the climate is suitable; and also all varieties of horticultural plants which are of utility, and which beautify the garden. Grapes are now in abundance, though the present year has been unfavorable to their growth; many seemed to have been checked in their growth when *half* grown. The varieties, as far as my knowledge goes, are the Catawba, the Isabella, and a white *foreign* grape. Small fruit, such as plums, cherries, &c., though in great abundance, have not come to perfection this year in great quantities. The cause is obvious: first, the cold, backward spring, and former part of summer; then the vermin that prey upon such fruit were numerous and very destructive.

"A great deal of fruit has been grafted and budded this season. You will perceive by the drift of my remarks, that every thing in our country looks to the future for improvement. Theory goes before practice. The Boston plough which took the premium at the great London Fair is by no means such a plough as would be of any use in the *prairie* country, where we plough eight or ten inches deep, with three or four horses, or two or three yoke of oxen. But McCormick's reaper, sometimes called the *Virginia* reaper, is most exactly suitable to cutting the large fields of wheat sown on the prairies, and which so soon grow *too* ripe, from a cause not well known. Our wheat and corn are both very good this season, though not so abundant a yield as last year. The *average* of wheat per acre will be about fifteen bushels; that of corn, about twenty-five; though some fields I have seen of wheat have yielded twenty-five bushels, and some of the corn, fifty. Corn is now selling briskly at

thirty-five cents per bushel; the farmers are rapidly carrying their old corn to market. Without doubt our fruit, and many other things, such as poultry, prairie chickens, &c., will be taken by the owners to New-York market before many years pass. We have here in La Porte four different kinds of soil. First, the prairie land, which will be the most durable if properly cultivated. Its prominent qualities I have given you. The next best lands are burroak barrens, very rich. The third are beech and maple lands. The fourth, oak openings, a light soil, good for fruit. I may add another quality of soil which we have in our county: a large amount of marsh land. This will be at some future day a most valuable land, I believe."

PRAIRIE SOIL.—Our correspondent in Indiana favors us with the following analyses of the rich prairie loam, which forms the wealth of that rich agricultural State. Table I. represents the composition of the finer as separated from the coarser mould. Table II. the analysis of the coarser; and Table III. the result as combined. The unusual predominance of silica is noticeable:—

I.	
1. Organic matter combined with water....	10.00
2. Silica.....	76.00
3. Combined silica.....	1.50
4. Alumina.....	4.25
5. Oxide of iron.....	4.25
6. Carbonate of lime.....	1.50
7. Magnesia and other alkalies.....	2.50
	100.00

II.	
1. Organic matter and water combined,....	8.00
2. Silica.....	84.00
3. Magnesia and alkalies combined.....	2.50
4. Alumina.....	2.50
5. Oxide of iron, ..	3.00
6. Carbonate of lime.....	1.00
	101.00

III.	
Organic matter, &c.,.....	18.00
Silica.....	160.00
Magnesia, &c.,.....	5.00
Oxide of iron.....	7.25
Alumina.....	6.75
Carbonate of lime.....	2.50
Combined silica.....	1.50
	201.00

EAST BLOOMFIELD, N. Y.—R. S. T. furnishes us with a description of the animals exhibited at a Fair held in that village on the 24th of September, and adds many interesting remarks. He speaks in high terms of the cattle, of which there were about ninety head, mostly "grade cattle," a mixture of the Durham and Devon breeds, and all worthy of commendation. The Saxon and

Merino sheep were respectable in their classes, but grade sheep were the most numerous, showing plainly that the growing of mutton is considered an object in those parts. "Of the swine," he proceeds, "I am disposed to speak very highly indeed. I think the exhibition in this particular fully equal to the late State Fair, and better than at many county Fairs. They were uniformly white and of a very thrifty appearance. No taints of Razor Blade or Racer blood were discernible among them. I think there was a more marked improvement in hogs than in any other class of animals exhibited."

TREE PLANTING.—Mr. Jonathan Shearer, of Plymouth, Michigan, obliges us with some useful suggestions upon the "Setting out of Trees." He recommends that the hole destined to receive the tree be four feet in depth and in diameter, unless the soil be a stiff clay, when the diameter should be doubled; the bottom covered with rich loam, upon which the roots, previously immersed in water, are to be rested; the hole then to be filled in with the former earth, and the surface left nearly as possible level, so that the rain may properly filter through. Corn and potatoes are allowable in apple orchards; oats and clover forbidden. Grass will answer among peach trees of three or four years' growth. The roots of fruit-trees taken up in fall or spring should be carefully shielded from the frost.

SUBSTITUTES.—*Messrs. Editors:* I know not that the drought which prevailed in this section extended to the Northern States, but whether it did or not the remarks which I shall make will apply with equal force. Every farmer should raise corn enough for his own use without buying any, and then raise other things to feed his stock, and thereby save all the corn he can. If his crop of corn should fall short, as ours has done this season, he may, with good economy and the use of other things as substitutes, get along very well without buying.

The most valuable of these substitutes, according to my experience, is a good barley lot. No person who has never raised it can form any idea of its value. I think an acre of good land, highly manured and sowed in barley, worth \$50 to any farmer. It should be sowed in this latitude as early as the first of September, and from the middle of November until the first of February, it may be grazed down occasionally; and from then until the middle of April it may be suffered to grow up and be cut down and fed to horses or other stock. There is one characteristic about it different from that of any other grain with which I am acquainted: horses may be fed on the

green barley and worked every day, and it will not give them the scours as other grains do.

Rye is another profitable grain to raise for grazing and for cutting for horses in the spring, while in the milk. Horses are fond of it, and I believe it has a tendency to rid them of the bots.

It is best to sow rye in September, but it may be sown any time until the first of January. It will grow very well on land that will not grow barley; but it is not as strong food as barley, neither are horses so fond of it. Rye makes an elegant winter pasture for sheep when sown early, and they do well on it with a little dry food and salt.

Besides the two grains which I have mentioned, there are a variety of grains, roots, &c., which may be raised to great advantage, not only to winter stock on, but to feed them in summer.—WILLIAM C. DICKSON, *Milledgeville, Ga.*

TURNIPS—LATE HARVESTING.—Never take in your turnips till there is a prospect of the ground's freezing. As a general thing, the growth of this root proceeds far more rapidly in cold than in warm weather, and a light frost is by no means injurious. I have known this crop to remain out till the soil froze quite hard, and no injury resulted to the crop. If harvested before cold weather, the turnips become "corky" or spongy, and shrivel up, which induces an unpleasant flavor, and a tendency to decay. In this condition they are fit only for stock-feeding.

BRAINTREE, VT.—Mr. Lewis H. Spear sends us a very valuable essay on the culture of the Blackberry, which we shall carefully reserve until the proper season for matter of the kind. Mr. Spear is one of the proprietors of very valuable nurseries at Braintree. We are happy to be favored with his practical information.

STOCK-BREEDING.—When a minor I was told by an English herdsman how to get the best pair of oxen in the country. He said: "*Heifers and young mares put to old sires are sure to have male offspring, to which they will impart the properties and color of their sires, whatever may be their own.* If you can find an English bull, his size and points, color and temper will doubtless be superior. Engage the calves of two of the best heifers put to him; they will have all the valuable points of the imported sire and the stamina of the heifers added." I was so interested in his statement that I determined to secure what I hoped would be a prize, and succeeded in buying the calves and raising, as he proposed, a yoke of oxen in all

respects exceeding my expectation—kind, quick, steady, tractable, handsome and enduring. My subsequent observation and experience have added something to my progress, from that starting point, in tracing the lines and laws of nature. I can now account for the interesting correspondence of Gen. Washington with English stock-breeders and agriculturists, his and their particularity in propagating stock, their very liberal expenditure in obtaining the *very best*, and their desire to extend and share the pleasure and profit of the enterprise with kindred spirits across the Atlantic.—BENJAMIN WILLARD, *Lancaster, Mass., Oct. 14, 1851.*

THE FLY IN CANADA.—The inspectors of the *Beauharnois County Society* report, in reference to that district, that the crops of wheat, oats, peas, barley, and hay were about an average, while potatoes and Indian corn promised very indifferently. They observe, respecting the former grain: "In the course of our tour of inspection we observed that the general appearance of the crops promised an abundant yield, both of grain and straw, but that the early-sown wheat has been much injured by the fly, and we

estimate the damage done by that insect will amount to about one fourth. On inquiry, we found that in all cases where the fly had been at work, the crop had been sown before the 20th May. Though we state the fact, we do not give it as our opinion, that farmers should make it a rule not to sow till after that time, as much seems to depend on the seasons, &c. However, the wheat sown between the 25th May and 7th June was free of fly, filling well, and promises to make fully an average return if the weather prove favorable for harvesting operations."

AN EFFECTUAL CURE FOR SMUTTY WHEAT.—Make a strong ley of oak-wood ashes, in which soak the wheat for twelve hours, stir it, and take off the smut balls that rise to the surface. Take the wheat from the ley, and sift powdered or pulverized lime over it, and mix it well with a shovel. Then sow it within one to four hours. Be careful not to put it in the same bags that the smutty wheat was taken from, nor to use the same shovel or any other thing that had come in contact with the wheat before it was soaked, and you will find a radical cure effected.—WILLIAM CRISPIN, *Great Timber Creek, N. J.*

TOPICS OF THE PRESS.

AGRICULTURE IN OREGON.—A letter from Umpqua Valley, Oregon, published in the *New-York Courier*, says the climate is so mild in that quarter of the globe, that sleeping out doors is no hard-ship. Even in winter, the ground in the valleys never freezes, so that oats, potatoes and barley are sown in the fall. The wheat has the largest berry ever seen. Oats of a corresponding quality are raised *five years in succession from one sowing*, yielding at the rate of fifty bushels to the acre at each crop! Indian corn does not do so well, on account of the droughts in August and September; but potatoes, turnips, and other roots, in the moister locations, grow to a great size. No insects or weeds trouble the crops of any kind. Apples produce abundantly; and plums, crab-apples, raspberries, (a large yellow variety,) whortleberries, (a red species,) strawberries, and several other berries of fine flavor not known at home, are very abundant. Government gives to every actual settler on public lands in Oregon 640 acres in fee simple.

NOVEL APPLICATIONS OF STEAM.—According to a paragraph in the *London Morning Chronicle*, the Marquis of Tweedale has at length succeeded in bringing to a great degree of perfection a steam plough, with which some interesting experiments have just been made. The general principle of

action is as follows: A locomotive engine is stationed at each end of the field, and moved as the furrows are completed. The ploughs, having the Tweedale mould-board, are fixed on both side of a frame, (the upper being of course reversed,) which is turned over at the end of each set of furrows, for the purpose of performing the same operation on its return. The implement has been fairly tested at Yester, the seat of the Marquis in Haddingtonshire, and performed its work beautifully. On Saturday last one engine was in use as a primary trial, when the plough-frame was conveyed, on finishing each set of furrows, to the other end of the field, and the land ploughed at the rate of three and a half miles an hour. On Monday his lordship had two engines on the field, with the ploughs constantly at work between them. The operation of turning the frame at the end of the furrows is very perfect, and the success of the whole affair undoubted, the calculation of work done being at the rate of fifteen acres per diem.

The uses of steam are not confined to the cultivation of the grain. They not only grind it, but absolutely serve to relieve the baker of half his toils. A description of the process of baking by steam will not be found uninteresting. When the loaves are moulded, they are placed on carriages, and conveyed on railways into the ovens, which are made

of cast-iron, and placed one above the other. The doors being closed, the steam is then turned on from the boiler, and passing through a singularly formed coil of pipes, heated to a high degree in the furnace of remarkable construction, is, by opening the valves, admitted to the ovens. The baking process, from the time of running in the carriages to drawing them out again, occupies from half an hour to an hour and a half, according as the loaves vary in size. There are perforated pipes placed at equal distances inside the ovens, by which means all parts are alike heated. The heat is kept within determinate thermometric limits by the adjustment of the valves, and the degree ascertained by an indicator, the "bulb" being scarcely thicker than a cobweb, yet ranging from 120 to 800 Fahrenheit.

EXPERIMENTS IN WEIGHT OF LIME.—Mr. Henry Crist, in a communication in the *Ohio Cultivator*, states that he has "tested the comparative weight and measure of lime in its different forms, noting the quantity of water necessary to slake, the amount incorporated with the lime in slaking, also the quantity evaporated, &c. Result as follows: 1 bushel unburned limestone weighed 142 lbs. 1 " limestone fresh from kiln weighed . . . 75 "

Difference between burned and unburned, . . . 67 lbs.

"This bushel burned lime required just 20 lbs. water, applied a few pounds at a time, in five successive days, to bring it into its most lively form, in which form it measured fully two bushels, good round measure, and weighed 93 lbs.; showing that out of the 20 lbs. of water applied to slake it, 18 lbs. were incorporated with the lime, and 2 lbs. evaporated. Increase in slaking, 24 per cent."

WOOL TRADE OF CHICAGO.—We learn from the *Chicago Tribune* that the amount of wool shipped from Chicago in 1849 and 1850 was as follows:—

1849, - - - -	520,205 lbs.
1850, - - - -	913,862 "

Increase, - - - 396,657 lbs.

During the present year there had been received—

By railroad, up to Sept. 1st,	195,200 lbs.
By canal, to October 1st,	482,299 "
Other sources, (estimated),	200,000 "

Total, - - - 877,499 lbs.

We incline to the opinion that the close of the year will show the receipts of 1851 to have been about 1,000,000 lbs. If we assume 25 cents as the average price per pound, (which is too little,) the total value of this

year's crop in Northern Illinois is \$250,000, exclusive of what has been manufactured in the State.

ONE OF THE ROOTS.—Mr. Emery F. Lincoln, of Alexander, dug up on his farm, and has now in his possession, a *clover root*, which is 3 feet and 10 inches in length. The root ran perpendicularly into the ground, and is three inches in circumference at the top.

PHOSPHATE OF LIME.—Mr. Joseph Harris, of Rochester, states in the *Genesee Farmer* that the mineral phosphate of lime used in England as manure contains 50 per cent. of phosphate, and is sold, when prepared for use with sulphuric acid, at \$25 per ton. The phosphate of lime at Crown Point, in this State, contains, as we have before stated, according to the analyses of Professor Emmons and Professor Norton, from 80 to 90 per cent. of phosphate. This will afford a criterion of its value, compared with the English article. Mr. Harris states that he has seen the prepared phosphate applied to various crops. Its effects were greatest on turnips, often increasing that crop four-fold. Its effects on leguminous plants, clover, beans, &c., were beneficial; on wheat, but little benefit was derived. He suggests that it may prove of great use in tobacco culture.

LARD OIL.—There are said to be in Cincinnati forty manufactories of lard oil, which use 15,000,000 pounds of lard per annum. Of this, 5,120,000 pounds is converted into stearine, leaving 4,480,000 pounds, equal to 1,110,000 gallons of oil. The hogs of our Western States will soon come into strong competition with the whales of the Pacific Ocean.

FATTENING GEES.—It is asserted, says the *Germantown Telegraph*, that the poulterers of Great Britain, and some other countries, are in the practice of mixing *gin* with the food of their geese, turkeys, hens, &c., in order to enlarge their livers, and cause them to take on fat. The same practice of fattening geese, with especial reference to the enlargement of the liver, is said also to obtain at Constantinople, where pies made of this viscous, in its swollen or intumescent state, are held in high esteem. It is also said to have been known to, and practised by the ancients, who, if we may credit the testimony of ancient authors, possessed the art in that perfection which enabled them, in a short period, to increase the size of the live to an extent greater than that of the goose itself.—Martal. l. 13, c. 58. This enlargement is attributed to feeding on fat and fig.—Horace, l. 2, Sat. 8. Juvenal presents these swollen livers before an epicure as

great rarity.—Sat. 5, l. 114; and Perseus, Sat. 6, l. 71. Pliny also asserts that these enlarged livers were soaked in *mulled milk*, probably milk mingled with honey and wine, and informs us that “it is uncertain whether Scipio Metellus, of consular dignity, or M. Sestius, a Roman knight, was the great discoverer of this dish.” M. Brydon asserts that the same art exists in Sicily. Is it not surprising that rational men should require such a dish as that afforded by this article? Enlarged goose livers, soaked in *mulled milk*! Scarcely less revolting would be the cannibal’s meal than these diseased livers to a person of correct taste. Every person must be sensibly aware that the swelling or intumescence of the liver is nothing short of disease, whether in man or animals; the same is produced in swine by eating the sediment deposited by wine, and in man by the frequent and exorbitant ingurgitation of cider, wine, brandy and other stimulant beverages. In fattening geese, the allowing them a liberal supply of charcoal, keeping them as much as possible at rest and in the dark, with a daily feed of leniscent, finely crumbled and moistened with wine, will cause them to take on fat very rapidly, and without exposing them to disease, unless the treatment be too long continued. The flesh of geese fattened in this way is remarkably fine, tender and sweet.

EMIGRATION TO THE WEST.—There is a heavy tide of emigration setting westward this season, particularly along the line of the National Road. The *Indianapolis Journal* says: “Emigrants are continually passing through here, bound westward, in great numbers. For the past three or four weeks the National Road has been thronged with them. We think it is reasonable to say that, on an average, three hundred wagons per week, or fifty each week day, have passed through for the last four weeks. At an average of four persons to each wagon, according to this estimate 4,800 persons have passed through in the last month. But we will say that 5,000, in round numbers, will have gone through this year, at the close of the season, and this we believe to be a reasonable calculation. If the emigration is as great in proportion on other thoroughfares, the accession to the population of the new States and Territories this year will be immense.”

A NEW COTTON PLANT.—The editor of the *Orleanian* has seen a boll of cotton, that deserves the attention of cultivators, on account of its rapid growth and early maturity. On the 1st of June last, a lady planted in her flower-garden a few cotton seeds presented her by a gentleman. On the 25th of

July a boll was ready for picking, and at the end of sixty days from the time of planting the cotton had arrived at maturity; being in less than one half of the time it takes the species now raised by our planters to do so. The lady was totally unacquainted with the cultivation of the great Southern staple. The seed was introduced by Mr. Hyams, from Yucatan, and is styled the Alica.

GROUND AND UN-GROUND—COOKED AND UN-COOKED FOOD.—In a communication from the Society of *Shakers*, at *Lebanon*, New-York, in the *Patent Office Report*, we find the following upon the relative value of ground and unground, cooked and uncooked corn for feeding and fattening cattle, &c.:—

“The experience of more than 30 years leads us to estimate *ground corn* at one third higher than *un-ground* as food for cattle, and especially for fattening pork; hence it has been the practice of our society for more than a quarter of a century to grind all our provender.

“The same experience induces us to put a higher value upon cooked than upon raw meal; and for fattening animals, swine particularly, we consider 3 of cooked equal to 4 bushels of raw meal.

“Until within the last three or four years our society fattened annually for 30 years from 40,000 to 50,000 pounds of pork, exclusive of lard and offal fat; and it is the constant practice to cook the meal, for which purpose 6 or 7 potash kettles are used.”

The *Shakers* are a close-observing, calculating people, and go in for the practical realities of life, and therefore, in the economy of food, must be presumed to be good judges. For ourself, we are disposed to believe the conclusions to which they have arrived are correct.

WHAT CAUSES THE DIFFERENCE?—The *North British Agriculturist*, speaking in reference to the difference in the quality of the flesh of different breeds of animals, says: “As regards the black-faced Cheviot and South-Down breeds of sheep, the West Highland and Angus breeds of cattle, the flesh of these, if not more nutritious, is at least palatable. The short-horns, Herefords, and Devons, when fattened at a proper age, produce beef of excellent quality, but is often deficient in that finely-flavored taste which distinguishes such breeds as the West Highland. How much of this is owing to the nature of the breeds, or to the food upon which they are reared, are questions which we think have not received that attention from scientific men which the subject demands.”

EDITORIAL AND SELECTED MISCELLANY.

THREE passages have been made from New-York to San Francisco within 100 days, viz.:—Ship Flying Cloud, 90 days; Surprise, 96; and Celestial, 100 days. . . . No less than 8,000 emigrants arrived in New-York during the last week in September. . . . THE notes of the new bank of Bridgeport, of which Mr. P. T. Barnum is a principal stockholder, have a portrait of himself on one end, and one of Jenny Lind on the other. . . . IN dentistry the United States surpassed all other countries at the great London Exhibition. . . . POWERS' statue of Eve has reached New-York. . . . OF the hundred and sixteen victims sent prisoners to Spain, fifty-one are ascertained to be of the age of 22 years and under, down to the age of 16; and of the whole number only eighteen are above the age of 30 years. . . . MRS. JUDSON (Fanny Forester) and her children have arrived in Boston, with health much improved by their voyage from India. . . . THE Mammoth Cave in Kentucky is now owned by the children of the late Gen. Jesup and the children of the late Col. Crog'han, who received it as a bequest from a wealthy relative. . . . THE whole number of newspapers in Texas is thirty-five. . . . THE citizens of St. Louis and its vicinity have decided upon a loan of \$100,000, in addition to the State loan of \$250,000, for the purpose of assisting in the completion of the Pacific railroad. . . . THE present King of Prussia is publishing a complete edition of the works of Frederick the Great. Eighteen volumes have already seen the light. . . . THE *Scioto* (Ohio) *Gazette* notices a stalk of corn in the office, from the farm of G. W. Renick, which is seventeen feet high! . . . THE California editors recently held a convention at San Francisco for business purposes, and to cultivate good feeling among the various members. . . . AN old lady was telling her grand-children about some troubles in Scotland, in the course of which the chief of her clan was beheaded. "It was nae great thing of a head, to be sure," said the good lady, "but it was a sad loss to him." . . . THE coronets of a duke, marquis, and earl, have strawberry-leaves; a viscount has sixteen pearls, set close together on the rim; that of a baron, six, at equal distances—four only are seen in engravings. . . . THE bones of a mastodon have just been found in Green township, Sussex county, N. J. The tusk mea ures ten feet in length, and weighs 165 pounds. . . . THE Australian gold mines yield richly, and the inhabitants are described as mad with excitement. A blacksmith of Bathurst obtained 11 pounds of gold in one day. . . . THE most attentive man to his business we ever knew, was he who once wrote on his shop door, "Gone to bury my wife; return in half an hour." . . . THE census returns of South Carolina show that the slave population exceeds that of the free by 101,461. . . . MARSHALL PIERCE, of Putney, Vt., has sent to the editor of the *Springfield Republican*—so the letter says—an apple measuring fourteen inches in circumference, and weighing seventeen ounces. . . . MR. MARTIN FARQUHAR TUPPER, who recently visited the States, is, it is said, about to produce a history, or rather a sketch, of American writers. . . . TO speak well is to sound like a cymbal, but to do well is to act like an angel. . . . THERE is only one paper published in Egypt proper, and belongs to the Pacha. All his officers are compelled to subscribe for it. . . . EUGENE SUE is engaged on a new novel, which he calls "Miss Mary." . . . ECHO is the shadow of sound. . . . THE quality least met with in gallantry is love. . . . THERE is merit without elevation, but there is no elevation without some merit. . . . HE that forecasts what may happen, shall never be surprised; 'tis too late to begin to arm when the enemy is in our quarters. . . . A GOOD character is like capital in business or stock in trade. . . . GOV. LEVI LINCOLN exhibited twenty-eight varieties of pears at the Worcester (Mass.) Horticultural Exhibition. . . . If you will have a constant vigorous health, a perpetual spring of youth, use temperance. . . . OUR waggish friend of the *Providence Journal* says:—"We have heard of the case of an adventurous rattlesnake which bit an old toper whose

skin had been full of liquor for many years. The man was not hurt, but the snake died." . . . TRUTH is a divine blossom upon an earthly root. . . . To philosophize is to recollect ourselves on all sides. . . . PERFECT confidence between parent and child is a seven-fold shield against temptation. . . . If you harbor malice against any human being, you cherish a worm in your heart, that in time will eat out all its goodness. . . . AN hour's industry will do more to beget cheerfulness, suppress evil humors, and retrieve your affairs, than a month's moaning. . . . "THE difference between a bankrupt and a watch," said B., "is, that the former 'goes,' and is 'wound up;' while the latter is 'wound up' before it goes!" . . . A BASHFUL young lady intimates that when she gets married she means to take chloroform. . . . THE difference between a post-office stamp and a donkey is, that you stick one with a lick, and lick the other with a stick . . . If the sun is going down, look at the stars; if the earth is dark, keep your eye on heaven. With God's presence a man or child may be cheerful. . . . DISINTERESTEDNESS is the soul of virtue. . . . SINCE Time, says Goethe, is not a person we can overtake when he is past, let us honor him with mirth and cheerfulness of heart while he is passing. . . . It is thought that the Cuban prisoners after being sent to Spain, will be liberated. . . . THE folly of one man is the fortune of another. . . . CHEERFULNESS throws daylight upon the path of life. . . . A WAG has truly said, if some men could come out of their coffins and read inscriptions on their tomb-stones, they would think they had got into the wrong grave. . . . FOOLS are ruled by humor. . . . FORTUNE often makes a fast and then takes away the appetite. . . . ACCORDING to a census taken by themselves, there are 18,000 Mormons at the settlement on Salt Lake. . . . THE flying-machine, in process of building in New-York, is said to be "very simple." So will those be who attempt to travel in it. . . . THE Chinese have records of a great starvation which took place about the time when Joseph was prime minister of Egypt. . . . A PORCELAIN manufactory is about to be established in Stockton, California, by the Chinese. The feld-spar of which this beautiful ware is made, is found in large masses in the San Joaquin valley. . . . THE official census returns of South Carolina give as the total free population of the State, 283,523; slaves, 384,984. . . . THE submarine telegraph between England and France has been successfully completed. . . . A FARMER in Caroline county, Va., states that one acre of his land has produced 56 bushels of wheat, each bushel weighing, when thoroughly cleaned, 61 pounds. . . . THE length of the Virginia railroads completed is 565 miles, and 890 miles are now being built, which, when finished, will considerably extend the resources of that State. . . . THE tobacco crop in Ohio, says the *Cincinnati Commercial*, is larger and finer than at any previous season. The State is fast rivalling Kentucky and Missouri in this great staple. . . . A VESSEL arrived at London from New-York had 1,400 firkins of butter as a portion of her cargo, the produce of the United States of America. . . . It is an extraordinary fact, stated on authority, that there is at the present time more of an Irish population in the United States of America than there is in Ireland itself. . . . At the Worcester county fair, five premiums were awarded to ladies for best specimens of domestic bread. . . . THE great Michigan railroad conspiracy trial has resulted in the conviction of twelve of the prisoners. . . . At the late Kentucky State Fair a pumpkin was on exhibition weighing 133 pounds, and measuring 6 feet 9½ inches in circumference. . . . SURGEON KANE brought home in the *Advance* a bottle of red snow water from the Arctic region. Red snow is a fungus growing on white snow. . . . A LETTER from Vienna announces that a grand industrial exhibition is to take place in that city next year, on the plan of the one in England. . . . IN the way of telegraph lines Michigan alone has now already more miles completed than has the whole of England. . . . ATTEND to the construction and repair of fences, so that what is made through the toils and anxious cares of the husbandman, may not be lost through his neglect to protect his crops from the depredations of stock. . . . THE Royal Mail

Steam Packet Company is having constructed five gigantic steamers to run between Southampton and the Isthmus of Panama. . . . NEVER betray confidence of any kind, but more particularly that of a woman. . . . THE number of persons who have visited Niagara Falls this season has been from 90,000 to 100,000. . . . MR. HANSON ROBERTS, of Dover Neck, N. Y., has raised on his farm the present year fifty-seven bushels of winter rye from one bushel of seed sown. . . . MR. C. WENTWORTH DILKE, the editor and proprietor of the *London Athenæum*, has been offered the honors of knighthood, in consequence of his services in respect of the Crystal Palace. . . . Good sense is invariably found connected with good nature. . . . THE body of Wilson, one of the Minot's light keepers, was found by Mr. Bennett last month, near the wreck of the light-house. Very little flesh was found upon the remains, but sufficient clothing was attached to identify the body. . . . THE Government of Canada removed from Toronto to Quebec on the first of October. . . . JOHN BANVAED, who made a fortune and fame by his panorama of the Mississippi, has returned to America, after a residence of three years in Europe. . . . ANOTHER son of Victor Hugo has been condemned to nine months' imprisonment, and fined 2,000 francs, for an article on the expulsion of foreigners from France. . . . THE bones of Stephen Girard were ceremoniously transported on the 30th September to the grand sarcophagus within the College. . . . THE first medical degrees conferred in America were by King's College, New-York, in 1769. The first medical work was "A Brief Guide on Small Pox and Measles," by Thomas Thatcher, of Massachusetts, published 1677. . . . A VERDICT of \$10,000 has been given to a young lady in Henry county, Ky., in an action of slander against her lover. . . . IN the city of Hartford the water-works are to go into operation next spring. The work is progressing with all convenient dispatch. . . . FIVE hundred police officers were on duty in Boston during the railroad jubilee. . . . "Is not that a beautiful shell?" asked a lady, fishing to show her science. "Indade, madam, an' it is," replied an Irishman; "but I am no botanist, and do not understand physiology." . . . For a week after Father Mathew's visit to Troy no case of drunkenness was before the police court. . . . THE *St. Louis Union* says that the Pacific railroad has been suspended, in consequence of a controversy with some of the landholders on the route about the price they shall receive for their lands. . . . A NEW system of posting the names of streets has been patented in London, and is on trial by the authorities. The name is blown or stamped in the glass on the street lamps, and is thus seen equally as well by night as by day. . . . THE *Eastport (Me.) Sentinel*, of the 30th ult., says:—"The copious rains of Tuesday and Saturday nights, and Sunday last, have entirely quenched the disastrous fires that were raging about us. . . . THE hope of happiness is often the truest happiness we can possess; the purest joy is never so pure as its desire. . . . DANIEL DEFOE, author of 210 books and pamphlets, died insolvent. . . . FIFTY persons are digging for gold at Stratford, Conn., in the expectation of finding from \$7,000,000 to \$10,000,000, said to have been buried there by a Spanish captain. . . . JOSEPH S. CABOT, Esq., of Salem, has been chosen President of the Massachusetts Horticultural Society. . . . BOOKS were bound in oak boards until the fourteenth century. . . . FOUR thousand tons will this year be added to the mercantile marine of Charleston. . . . A POSTMASTER's clerk says, that if the people will affix their stamps to the right hand upper corner of their letters, they will greatly facilitate his labors in stamping and cancelling stamps preparatory to mailing said letters; and he will be their greatly obliged servant. . . . DURING one week there arrived in New-York 11,094 emigrants; of these 7,850 were from British ports. . . . THE new Government buildings (Post-Office and Custom-House) at Cincinnati are to be commenced immediately. . . . THE Providence Athenæum now contains 16,602 volumes, of which 691 have been added during the past year. . . . THE oldest pyramids are the most perfect works of art. . . . IN Berlin the Government is making an effort to place duelling out of fashion, and lately compelled the survivor in an affair of honor to be present at the *post mortem* examination of his victim and watch the proceedings.

The Plough, the Loom, and the Anvil.

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THE HARMONY OF REAL FREE TRADE AND THE DISCORDS OF BRITISH FREE TRADE.

BY H. C. CAREY.

SOUND political economy tends to the production of harmony and peace among nations—of combination of action, prosperity, and equality, among men. Unsound political economy tends to the production of discord among nations, and of poverty and inequality among the people of whom they are composed, with constant tendency to the diminution of power to combine their actions for the accomplishment of any measures tending to the improvement of their common condition. If, therefore, it be desired to determine the claims to consideration of any system, as a *real free-trade one*, the test most proper to be adopted is that of its tendency to promote or to diminish the love of association and the power to associate; for every act of association is an act of trade, and *the more perfect the power to associate the larger must be the quantity of trade.*

Tried by this test, the British system is a failure. Denounced seventy years since by Adam Smith, the father of the *real free-trade* system, as tending to produce discord both at home and abroad, every day that has since elapsed has tended to prove the perfect accuracy of his views; and in now looking around us it is impossible we should fail to remark that the tendency to discord and depopulation is in the precise ratio of the influence exercised by the system now being palmed upon the world under the guise of “free trade,” but having for its object the maintenance of the monopoly by Great Britain of the manufactures and trade of the world.

Of all the countries of Europe, Ireland has been the one most subjected to *British free trade*; and the result is seen in the constant war of races and of religions, the constant succession of agitations and attempts at revolution, and the extraordinary depopulation consequent upon famines and pestilences, the destruction of houses, and the expulsion of their occupants. In other countries such occurrences are usually the accompaniments of war, but here we find them in a time of profound peace; and they are accompanied by another fact, rarely observed elsewhere except in time of war, to wit: the forcible transfer of the land of the country, under a law passed for that express purpose, from the hands of its late owners to those of the bankers and merchants of England, the class of men in whose favor were passed the previous laws which compelled the people of Ireland to make all their exchanges with the world through the ports, and in the ships, and by the aid, of the merchants of England. Such are the blessings of *British free trade*. The land has been exhausted by the constant export of its products, and its owners have been ruined; and the English journals now inform us

that there is yet "Hope for Ireland," because of the formation of "an association of English capitalists, comprising Messrs. Baring and Messrs. Rothschild, with several of the largest English railway contractors, for the purpose of purchasing land in Ireland, and reselling or letting it in farms, thoroughly drained, fenced, and otherwise fitted for cultivation on the English model." By another journal we are informed, that among the people who are now about to profit by the depreciation in value of the land, consequent upon the annihilation of all power to bring the consumer to the side of the producer, is one who derives his whole means of subsistence and of speculation from the taxes paid by the poor people of England and of Ireland, as will be seen by the following paragraph:—

"A very influential company has been formed in England, at the head of which is represented to be Prince Albert, for the buying up of lands in Ireland. Their purchases are expected to be on a most extensive scale, and persons in their employment are now busied in obtaining information on the spot as to the position and value of various estates."

These journals omit to inform their readers what has become of the unfortunate owners of these lands, impoverished and ruined by the system that has built up the fortunes of the great bankers and contractors—the middlemen of England. The following paragraph, however, exhibits the manner in which *the many* are being driven from the land to make place for *the few* who desire to monopolize it:—

"The depopulation of the country progresses with rapid strides. Farms unoccupied, districts uninhabited, increase with a ratio which knows no cessation. . . . We never see a morning pass without a caravan of our countrymen and countrywomen arriving here, to pass away again on their route to that great republic which really seems destined to become the future home of our race. There is neither coach nor conveyance which enters Limerick on any day of the week, and Sunday is not an exception, which does not bear its quota toward the great sum which fills the multiplying emigrant-ships from every port with a western aspect, and leaves a large residuum in every town that affords a labor-market to the misery-stricken people of this land."—*Limerick Examiner*.

If we look to India we find a similar state of things. The large class of small landed proprietors has totally disappeared, and in the districts that have been longest subject to British rule, the courts in which British justice is administered have, says Mr. Macaulay, beggared all the rich men within their jurisdiction, and "*are now inactive for want of somebody to ruin.*" Mr. Macaulay is good British authority, for he describes only what he had witnessed on the spot. The productive power of that great country, with its hundred millions of people, is now in course of steady diminution, with corresponding diminution in the power to contribute towards the support of its government, which would now be bankrupt were it not that it enjoys at home a *monopoly* of the power to purchase opium from its subjects, yielding a revenue of sixteen millions of dollars,* and abroad a *monopoly* of the power to smuggle it into China, whose cities are battered down, whose men are de-

* The amount paid for opium, the price at which it was sold in Calcutta, and the profit, are thus given:—

	Disbursements.	Receipts.	Profit.
	Rupees.	Rupees.	Rupees.
1845-6, - - - -	7,757,742	29,610,660	22,051,918
1846-7, - - - -	7,331,137	30,702,904	22,871,757
1847-8, - - - -	10,558,767	23,625,153	13,066,386
1848-9, - - - -	10,826,500	34,930,270	24,103,775

We have here a profit of *twelve* millions of dollars upon an investment of *five* mil-

stroyed and whose women are outraged, that the domain of British free trade may be extended.

Look where we may throughout the British empire, it is the same. Scotland presents to view almost hundreds of thousands of people permanently almost at the starvation point, and dependent upon charity for the support even of existence, while whole counties are depopulated by the forcible expulsion of their inhabitants to make room for sheep, as being more profitable than men. England herself witnesses a constant succession of contests between the employers and the employed, the latter perpetually enfeebled in their efforts for the improvement of their condition by the influx of starving Irishmen ready to labor for little more than is required to find them food, and thus to furnish that "cheap labor" deemed by the *Times* so advantageous to "those who have money to spend." With each step in the progress of *British* free trade—the system so emphatically denounced by Adam Smith—there is, as was shown in our last, an increased tendency to the dispersion of British population, and emigration has now attained to such a point as to have become a cause of serious uneasiness to the reflecting people of England. Almost since the days of Malthus have the writers of that country attributed its vast extent of pauperism to what they have been pleased to style overpopulation, but it has only been within the last twenty years that there has existed an almost universal desire for the compulsory emigration of its people. During that time the press has teemed with suggestions as to the mode by which population might most cheaply be expelled—by which sons and daughters could most advantageously be made to desert parents, and by which men, women, and children could most certainly be induced to fly from the homes of their youth, to seek, in the wilds of Canada or of Southern Africa, of New-Holland or New-Zealand, the food and clothing denied to them at home; but of all the numerous modes suggested, none was cheap enough to conciliate public favor. The numbers of the people of the British islands might therefore have continued to increase but for the recent determination to sacrifice British agriculture to the insane desire to be "the workshop of the world." The substitution of foreign for domestic land and labor in the raising of food has now accomplished the object so long and so much desired, and henceforth, apparently, Great Britain is destined to diminish in wealth and population, the natural consequence of the maintenance and extension of the system described by Adam Smith as tending inevitably to diminution in the profits of capital and in the reward of labor. Believing that the following remarks of the London *Times*, upon the state of things now being witnessed throughout the whole extent of the British islands, may have interest for the readers of this journal, I give the following extracts from one of its most recent articles:—

"What has appeared to be the extraordinary emigration of the last five years continues unabated, and promises—or shall we rather say threatens?—to be the permanent drain of the British population. . . . Every where we are told the farmers are flitting with the produce of their crops, and the laborers with their wages for harvest work.

lions, and this profit is realized in the name of free trade! At Bombay, the revenue from this source was as follows:—

	<i>Rupees.</i>
1845-6, - - - - -	6,180,157
1846-7, - - - - -	6,108,418
1847-8, - - - - -	4,140,800
1848-9, - - - - -	8,732,800

Total revenue derived in *India* from the power to demoralize and poison the people of China, about sixteen millions of dollars.

Employers have been forced to pay this year a trifle more than heretofore ; and it now appears that, so far from this proving a temptation to remain at home, it will only increase the difficulty next year. Though this is the most unfavorable season of the year for emigration, the terrors of a stormy passage and an American winter seem to be lost on people who feel that no ocean or soil can ever be so inhospitable as that which has given them birth. The railways are loaded with emigrants, who, on their arrival at the port, race to the ship as if flying for their lives."

Every where the farmers and laborers are thus flying from the realm of *British* free trade, and the only effect of increased wages consequent upon a diminished abundance of hands, is that of increasing the ability to gratify the desire to leave the land that was to be enriched by the monopoly of the trade and manufactures of the world sought by the Manchester political economists, and for obtaining which they made the sacrifice of those engaged in the production of commodities to be exchanged or manufactured. The *Times* continues :—

"Should this emigration continue at the same rate for the next twenty years, it cannot but have important effects on this country. As it happens, the number happens almost exactly to tally with the natural increase of our population, so that a continued drain to this amount, and no more, would leave our population at a stand. Such a result, it might be supposed, is both natural and desirable. For a long time it has been firmly believed that we labor under a redundancy of population, and that in one island at least we could well dispense with very large masses. Accordingly emigration, even to its present unprecedented amount, has been hailed as the very remedy our condition requires. Nothing is more likely, however, than that the experience of an opposite state of things—such an experience, in fact, as that we are now likely to have—may disabuse us of this idea, and may prove that a country such as ours requires what is called a redundant population. An inexhaustible supply of cheap labor has so long been a condition of our social system, whether in town or in country, whether for work or for pleasure, that it remains to be seen whether a great enhancement of labor would not disturb our industrial, and even our political arrangements, to a serious extent. *Two men have been after one master so long, that we are not prepared for the day when two masters will be after one man*, for it is not certain either that the masters can carry on their business, or that the men will comport themselves properly under the new régime. . . . Commercial enterprise and social development require an actually increasing population, and also that the increase shall be in the most serviceable, that is, the laborious part of the population, *for otherwise it will not be sufficiently at the command of capital and skill*. These considerations assume no little gravity with the prospect before us ; when we are threatened with a population, not increasing, perhaps even diminishing in the aggregate, while the most useful, that is, the working class, is continually becoming less numerous, compared with the rest. Doubtless, a limited supply of labor may be met to a very great extent by the many new inventions for economizing it ; but it is scarcely credible that a country which has enjoyed so long a superabundance of labor, should be able at once, without inconvenience, to adapt itself to a totally different state of things. *Man has not had his proper value in these islands for the last half century. It may be for the ensuing half century to correct, perhaps very emphatically, the error of the past.*"

The whole tendency of the British system has been that of rendering labor superabundant, and thus causing "two men to be constantly seeking one master." It is here, as we see, apprehended that any change in the state of things by which labor shall be less controlled by capital, and "two masters will have to seek one man," will prevent the masters from carrying on their business as they have heretofore done, because they will be then no longer able to underwork the serfs of Russia or the wretched natives of Hindostan. "The condition of the existence" of the British "social system" has been, we are told, "an inexhaustible supply of cheap labor," that is, an inexhaustible supply of men who were willing to work for little more than was necessary to support existence, while the Peels, the Barings, the Rothschilds, the Hudsons, the "great railway contractors," and the whole race of middlemen, were accumulating immense fortunes, to be expended in the purchase of the properties of the smaller land-owners,

most of whom have disappeared from England, as they have also done from Ireland and from India; and with each step in the accumulation of land in fewer hands, labor has been less in demand, with a constantly increasing tendency to have "two men seeking one master." With every day of the existence of the present system of policy that tendency increases, and with every day there is increased tendency to the dispersion of the people of the British islands, the most conclusive proof that could be offered of the unsoundness of the system denounced by Adam Smith, yet continued to the present hour, spite of his solemn admonition as to the consequences that must inevitably result from the attempt to obtain a monopoly of the trade and manufactures of the world.

The tendency of emigration is clearly that of transplanting a portion of the people of Europe to a country in which they will experience an improvement in their condition; and if the transplantation of a portion tends, as is apprehended by the *Times*, to cause "two masters to be seeking one man," will not the people of this country, by extending here the market for labor, be aiding in the improvement of the social and political condition of the whole people of Europe? It is well known that the domestic production of iron in 1847 was greater by 600,000 tons than it was in 1842, and the value of this, in the various forms in which it was consumed, could not have been less than \$100 per ton, making the total value sixty millions of dollars, every dollar of which went for the payment of labor employed in opening mines, building furnaces, mining coal and ore, refining iron and converting it into railroad bars, axes, ploughs, shovels, nails, &c. If now to this we add the labor that was required for building mills and for constructing the machinery required for converting into cloth the vast *additional* quantity of cotton and sheep's wool worked up in 1846 and '47, and the labor required for tending that machinery, we shall readily arrive at an *additional* hundred millions of dollars paid in each of those years for the labor so employed; and had the production of iron and of cotton been permitted to grow undisturbed, those branches of manufacture would now involve the annual payment of *at least two hundred millions more than was paid eight years since*. Unfortunately, the course of events has been widely different. Our consumption of cotton and woollen cloth, and of iron, has receded to where it stood in 1845, notwithstanding an addition to the population of more than twenty per cent.; and with this recession there has been a diminution in the demand for labor, the effect of which is seen in the fact that great numbers of unfortunate immigrants, after having incurred the expense of coming to this country, deem it more advantageous to return, even to Ireland, than to remain, exhausted and impoverished, in the Union. The following paragraph is taken from one of the journals of the day on which I write:—

"GOING BACK.—Nearly two hundred steerage passengers, who had recently immigrated to this country, sailed for Liverpool from New-York on Friday in the ship *Ashburton*. It is said the owners were unable to accommodate about fifty others who applied for passage."

To raise the condition of man throughout Europe it is needed only that we pursue that course which will enable us to obtain large supplies of cotton and woollen cloth and iron, and that is to be done only by bringing the producer of iron and cloth to take his place by the side of the producer of food and wool—thus making a market for the labor of Europe, and by the same operation making a market on our land for the products of the land. Is it not then on every account desirable that we should return to the system that enabled us so largely to increase our consumption of cloth and iron during the

period from 1843 to 1847? Shall we not, by adopting this course, do much towards the establishment of harmony and prosperity among ourselves, and towards the elevation of man throughout the world? Is not this *the truly democratic* course of policy?

Parties, however, differ in opinion on this subject. The planter of South Carolina insists that by adopting a policy that looks to bringing the spindle and the loom to take their place among his own cotton-fields, he is taxing himself for the benefit of his fellow-citizens of the Northern States, and when he builds a mill he rejoices in the idea that he is thereby inflicting injury upon some of those who have thus far been perhaps the best of all his customers. The Virginian who finds himself and his plantation impoverished by reason of having made no market on the land for its products, insists that the true cause of difficulty is to be found in the fact that he is compelled to make his exchanges through Northern cities, and he determines to have direct trade with England, not so much because of the benefit to himself as because he will thereby be enabled to injure others. Such is the effect every where of the British monopoly that is now attempted to be sustained under the name of "free trade!" It is every where productive of discord and hate, and every where it is opposed to any increase of the habit of voluntary association among men for the improvement of their condition, either moral or material. As a specimen of the state of feeling engendered by the system which looks to the exhaustion of the land and the flight of its owners to new lands, to be in their turn exhausted, the following article is given from one of the journals of the day:—

DIRECT TRADE BETWEEN EUROPE AND THE SOUTH.

"A convention has recently been held in Richmond, to consider the subject of direct trade with Europe and the construction of a system of railways through the Southern States, similar to the one in the New-England States, and commensurate with the growing population of the South. Mr. Van Lennep, a special agent of the merchants of Amsterdam, was present at the convention, and will leave for Europe next Wednesday for the purpose of completing the arrangements tendered to the South in the way of moneyed and commercial facilities. His mission will extend, among other things, to ascertaining what amount of capital can be obtained from Holland to be employed in the construction of steamers to run in this trade; also to find out what may be proper to promote emigration to our shores, and what may be the probable number of passengers, including those from Germany and Switzerland, that will require transportation in the next few years. In addition to such information, Mr. Van Lennep's attention will be particularly directed to the most practicable means of combining the manufacturing interests in the interior of the European states, especially those between the Rhine and the Elbe, with a view to a coöperation with the producing interests on this side of the Atlantic; or, in other words, what is needed to place the commercial and consuming, the agricultural and manufacturing, interests of the two continents in the cheapest and most direct communication, avoiding all the unnecessary impediments which are the result of the present indirect, circuitous, and expensive trade. It is in contemplation also to take immediate steps, which will be aided by Mr. Van Lennep, to open credits in Holland, through proper agencies in this country, (commercial houses and banks,) by which means actual and available capital, properly distributed, will enter, in the ordinary way, into competition for the trade and productions of the South.

"Thus it will be seen that the South has commenced moving in earnest for the purpose of cutting off her connection with the commercial and manufacturing interests of the North, and establishing a direct communication with those countries of Europe which are the chief consumers of her products. This object completed, and *what will become of the cotton mills of New-England?* Will not Othello's occupation be gone? We cannot raise cotton at the North, but they can manufacture it at the South, as has already been demonstrated, and it now looks as if they will soon be able to find a market for all their surplus materials elsewhere than at the North.

"*The manufacture of cotton yarns is now rapidly extending in Georgia, Alabama, and Tennessee.* These yarns constitute an immense item in the profits made by Great Britain

out of Belgium, Holland, France, and Germany. They are destined soon to be divided more equitably between the producers in the United States and the consumers in Europe.

" 'This,' says the *Washington Union*, 'will be the inevitable effect of the direct trade from the southern Atlantic ports to those of Europe; and another of the achievements of this trade will be the extension of cotton as an article of consumption; for it can scarcely be doubted that the profits taken from England, increasing the capacity of the continental states to buy from us, will introduce such changes in their tariffs as will enable their laborers to clothe themselves in cotton, and give us in return the more costly products of linen and silk, and the mixtures of those articles. At present these tariffs are, as a general rule, so framed as to prevent the importation of our low-priced cotton goods, the manufacturer preferring to take the twist at a high duty rather than risk a competition with English capital, when there are no certainties that a direct exchange with America can be established. What the cotton producer desires is the increase of the number of human beings that can be clothed with the manufacture of this article; and nothing can do this but to lessen the obstructions which are interposed by nature or by art to a direct exchange of this manufacture for that which is produced by the labor of these human beings.'

"The repeated insults heaped upon the South by the hot heads of the North has at length aroused the Southerners to a true sense of their own interests. They have the whip in their own hands, and the Northerners will soon learn that they know how to use it. A judicious system of internal improvement, in connection with a direct European trade, will just settle the matter for all time; and to show that the Southerners do really mean what they say about this affair, we wish to call the attention of Northerners to the fact that the Richmond convention is not the end of the movement toward the independence of the South, for another convention on the same subject is to be held in Macon, Ga., on the 27th of October next, at which time they will undoubtedly have received the necessary information from Mr. Van Lennep to enable them to shape their future course, if not to place the whole thing in a suitable condition for immediate consummation.

"Is there any one so blind as not to see that the consequences of this movement will be most disastrous to the commercial and manufacturing interests of the North? Does any one believe that Northern agitation of the slavery question has had nothing to do toward hastening the consummation so justly to be dreaded by the business men of the North? And yet even now, when inevitable ruin is hanging over the heads of thousands, the curs of the humane abolition party cannot cease their snarling and yelping—more white victims must be offered up as a sacrifice on the unholy altars of their hellish doctrines. The truth is, the North has bitten off its own head, and now, not content with the result, actually persists in gnawing the neck down to the very vitals."

It is here proposed to establish direct intercourse with some of the nations of Europe; and with which of them is it that the planters of Virginia and of the South generally are thus anxious to enter into connection? Is it with free-trade Ireland? Certainly not. She is utterly ruined. With Portugal, so long the mere colony of Great Britain? Certainly not. With Spain, filled as it is with goods smuggled, on free-trade principles, through Gibraltar and through Portugal? With Italy, that grants to England a monopoly of the supply of cotton goods? Or with Turkey, the favored land of British free trade, in which protection to manufactures is quite unknown? With none of these is it, but with those countries, and those only, that have adopted protection as the true and only means by which to reach freedom of trade, it is that our Southern brethren desire to have more intimate commercial relations. They desire to trade with Belgium, described in a work before me as "*the very paradise of protection*,"—the country in which flax land yields more rent than would purchase the fee of four times the quantity of good cotton land; and the country that, by reason of making a market on the land, and being thus enabled to return to it the manure yielded by its products, has become, from being little more than a sandhill, the most fertile country in Europe; while Ohio, by pursuing an opposite course, has been falling from an average of more than twenty bushels of wheat to the acre to one of little more than ten, with daily tendency to decline, as the farmer sells off his soil in the

form of wheat, and returns to the land no portion of the elements with which it has parted.

They desire too to trade with Germany, which, *until the adoption of protection in 1835*, consumed less cotton in proportion to its population than almost any country of Europe. The imports of raw cotton into Prussia before the formation of the tariff-league or *Zoll-Verein* remained from 1827 to 1835 stationary at 44,000 cwts. per annum. That of yarn increased from 1823 to 1835, from 61,000 to 115,000 cwts. The total growth of consumption in twelve years was but 15,000 bales. The following shows the growth from that period in the territories of the confederation :—

	1836.	Average from 1837 to 1841.	1843.	1845.
Raw cotton, quintals, - -	152,364	200,093	306,731	443,887
Cotton twist and wadding, do.,	244,869	351,884	475,564	574,303
	397,233	551,977	782,295	1,018,290

The quantity had thus increased 150 per cent., and the home consumption had increased about 75 per cent., in a period during most part of which our own consumption had remained stationary.* The quantity of twist and wadding imported from Great Britain had increased 135 per cent. in a shorter period than was required in the latter for an increase in her home and foreign consumption of only 21 per cent. The power to import thus grew with the power of production at home.

They desire to trade with Germany, emphatically the land of protection.

Says a recent writer, "Let any one, before the late struggles, have visited the countries embraced in the *Zoll-Verein*. To say that protection has there *produced* manufacturing prosperity, would be to beg the question; but one thing is certain, that exactly *coincident in time and place* with the most stringent protective laws has arisen a manufacturing industry and production of wealth without an approach to parallel in all the former history of Germany. On every side are seen rising mills, factories, workshops, warehouses, teeming with an industrious and busy population; and so far from agriculture being neglected, it never made more rapid progress, to say nothing of the mining and metallurgical industry which has also received the most astonishing impetus."

But recently, nearly all the cloth consumed in Germany was supplied by England. Now, Germany undersells England in the markets of the world, *because protection has enabled her to effect on the spot, and without loss by transportation, the combination of the food and the wool, fitting both for cheap conveyance to distant markets.* But recently, all the hardware consumed in Germany was supplied by England. Now, Germany undersells England in the market of England itself, because she combines her cheap food with her own ore, also the produce of cheap food, and sends the two abroad in the form prescribed by Adam Smith in the following passage, to the careful perusal of which I desire most particularly to call the attention of such of my readers as desire fully to understand how it is that the farmer and planter are to be enriched by making a market on the land for all the products of the land :—

"An inland country, naturally fertile and easily cultivated, produces a great surplus

* The increase of consumption after the formation of the Union was very rapid. As early as 1838, it was said that "The cotton manufacture of Saxony had already become of twice the extent it had reached before the Union." The quantity of cotton hosiery made in Saxony has increased immensely of late, and from its cheapness has not only secured the monopoly of the markets of the Union, but has also been shipped largely to the United States.

of provisions beyond what is necessary for maintaining the cultivators; and on account of the expense of land carriage, and inconveniency of river navigation, it may frequently be difficult to send this surplus abroad. Abundance, therefore, renders provisions cheap, and encourages a great number of workmen to settle in the neighborhood, who find that *their industry can there procure them more of the necessities and conveniences of life than in other places. They work up the materials of manufacture which the land produces, and exchange their finished work, or, what is the same thing, the price of it, for more materials and provisions.* They give a new value to the surplus part of the rude produce, by saving the expense of carrying it to the water side, or to some distant market; and they furnish the cultivators with something in exchange for it, that is either useful or agreeable to them, upon easier terms than they could have obtained it before.

"The cultivators get a better price for their surplus produce, and can purchase cheaper other conveniences which they have occasion for. *They are thus both encouraged and enabled to increase their surplus produce by a further improvement and better cultivation of the land; and as the fertility of the land has given birth to the manufacture, so the progress of the manufacture reacts upon the land, and increases still further its fertility.* The manufacturers first supply the neighborhood, and afterward, as their work improves and refines, more distant markets. For though neither the rude produce, nor even the coarse manufacture, could, without the greatest difficulty, support the expense of a considerable land carriage, the refined and improved manufacture easily may. *In a small bulk it frequently contains the price of a great quantity of the raw produce. A piece of fine cloth, for example, which weighs only eighty pounds, contains in it the price not only of eighty pounds of wool, but sometimes of several thousand weight of corn, the maintenance of the different working people, and of their immediate employers.* The corn which could with difficulty have been carried abroad in its own shape, is in this manner virtually exported in that of the complete manufacture, and *may easily be sent to the remotest corners of the world.*"

Such is the policy of Germany, and therefore it is that the South now seeks to establish with that country a direct trade. Were the *Zoll-Verein* now to be dissolved, were protection to be abolished, and were England to be enabled to resume her monopoly of the supply of Germany with cloth and iron, would there be any desire to establish this trade? Assuredly not. The consumption of cotton would dwindle down to the point at which it stood in 1835; and it would do so because the farmers of the country would be compelled to seek at a distance the market they have now at hand, *and upon them would fall the cost of transportation.*

A great effort is now, as we see, to be made by the South, and what is the object that is to be accomplished? That of "lessening the obstructions which are interposed," and which now prevent "a direct exchange" between the producer of cotton and the consumer of cotton. How is that object to be accomplished? Is it not dispensing with the services of the merchants and manufacturers of England, the middlemen who now live at the cost of the producers here and the consumers of Germany, producing nothing themselves, and establishing a trade that shall be free from the numberless exactions of these middlemen? The work done, as at no distant time it will be done, there will have been made a great step towards freedom of trade, and *that step will have been a direct consequence of the adoption of protection by Germany*, with a view to the demolition of the British monopoly system. German free trade tends therefore to the emancipation of trade from the exactions of England—from the payment of taxes that she is enabled to levy by means of compelling the people of the world to make all their exchanges in her markets and in her workshops. Such, likewise, was the object of *American* free trade as established by the tariff of 1842, the effect of which was precisely that desired to be attained by the measure described in the article now before us. It "lessened the obstructions" to exchanges between the producers of food and cotton. Instead of exchanging by the circuitous route of Liverpool and Manchester, they exchanged at the nearer markets of Providence and Lowell,

and with every day there was a tendency towards bringing the place of exchange nearer to the cotton-fields; the effect of which was seen in the growth of domestic consumption from 267,000 bales to 631,000, while the effect of the tariff of 1846, in increasing the distance between the producers and the consumers of cotton, is manifested in the reduction of consumption from 631,000 to 464,000 bales; and yet the very people who have thus augmented "obstructions" at home are those that profess themselves most anxious to diminish them abroad!

"What the cotton producer desires," we are here told, "is the increase in the number of human beings that can be clothed with this article;" but that is, as I conceive, a most erroneous view of the true object to be sought by the planter. A million of Irishmen at home do not consume as much cotton as do a hundred thousand when transplanted to this country, because at home their labor is valueless, and here it is valuable. The planter, therefore, profits largely by making here a market for Irish labor. Twenty-four millions of our own people do not consume under the tariff of 1846 as much as twenty millions consumed under the tariff of 1842. The "number of human beings" has been increased, but the larger number are poorer customers to the planter than was the smaller one. He therefore loses heavily by diminishing the market for American labor. What he should desire would be to increase the productive power of the "human beings" that would desire to be "clothed with this article," and thereby increasing their power of consumption; and that was what was being accomplished under the tariff of 1842, when the consumption of cotton goods increased thrice more rapidly than the population, and would have so continued to increase to this hour, had he not sacrificed the great and rapidly increasing domestic market, in the vain hope of obtaining a substitute abroad. In that he has failed, and he now seeks direct intercourse with Germany, hoping there to sell cotton cloth instead of cotton, in defiance of Mr. Walker's views as to the advantage to be derived from employing low-priced foreign labor in place of the high-priced labor at home.

Direct intercourse will at some period be established, but can it now be done? Is it possible for any purely agricultural community to maintain direct intercourse with Europe, *unless their efforts to accomplish that object be accompanied with restrictions on intercourse by other channels?* I doubt it much. Canada has the St. Lawrence, the navigation of which has been improved at vast expense, and yet the most valuable part of her trade is carried on through New-York; and it is so *because protection makes a market in the Union for the surplus labor of Europe, and for the raw materials of other parts of the world, and thus provides large return cargoes, which pay almost the whole freight out and home, the consequence of which is that outward freights are so low as to defy competition.* But for this, the flour and the cotton would pay nearly the whole of the double freight, as is now the case with the rice and the cotton of India. Again, the purely agricultural community has to pay all the cost of transportation upon its whole product, and the consequence of this is that the amount left to the producer, after paying freights, commissions, &c., is so small as to leave little to be applied to the purchase of cloth or iron, and therefore the return freights of merchandise are very small, while there is no freight of passengers or of raw materials; and every circumstance that diminishes the quantity of inward freights increases the amount to be paid on outward ones. Transportation is the first tax to be paid by land and labor; and while the people of the South will continue to insist upon rejecting the advice of Adam Smith, and upon sending their commodi-

ties to market in the most bulky form, they will have, I think, to follow the example of the Canadians in maintaining an indirect intercourse with the world of Europe. The more perfectly those commodities can be fitted for consumption the larger will be the inward freights and the smaller the outward ones, and with every step in that direction they will find increased facility in maintaining direct trade with Europe and with the world at large, because with each such step their productive powers will increase, and therewith there will be an increase of wealth and of the power to consume the products of other lands, while consuming more of their own, and obtaining better prices for what they have to sell. The surest way then to obtain direct intercourse is to unite with their fellow-citizens in other portions of the Union in the effort to annihilate the monopoly of machinery fastened upon the world by Great Britain, the object sought to be accomplished by the tariff of 1842, and the accomplishment of which is the indispensable preliminary to the establishment of freedom of trade.

How small is now the tendency towards dispensing with the ships of the North in the transport of Southern products, may be seen by the following facts. In the two years from 1848 to 1850, the increase in the total tonnage of the Union was 381,000 tons, and of this but 18,000 tons could be found in the four principal Southern States, Virginia, North and South Carolina, and Georgia, with a territory of 195,000 square miles, being more than that of all the Atlantic States north of them; and the registered tonnage had decreased instead of increasing, as is here shown:—

	Registered.	Enrolled and licensed.
1847-8, - - - - -	61,677	97,341
1849-50, - - - - -	61,024	116,007
Decrease, - - - - -	657	Increase, 18,666

What is the tendency of things at the South is clearly shown in the statements published in our last respecting the decline in the trade of New-Orleans.* The tendency at the North has been for most of the past ten years towards an increased density of population, and each step in that direction is accompanied by increased facility for making roads and canals, by aid of which the West and South-west can communicate with Europe through the cities of the North more advantageously than by means of the ports of the Gulf of Mexico, while the demand at the North for laborers and for raw materials of every kind provides large return freights, the effect of which is so greatly to diminish outward ones as to give to Northern ports and Northern ships advantages that cannot be enjoyed by Southern ones; and while that state of things shall continue, all attempts at direct trade must result in failure, *a thing that is to be regretted by all—both North and South.*

It is, I repeat, greatly to be regretted by the North that the South can not and will not place itself in a position to have direct trade with the world. It cannot do this while it shall continue exclusively agricultural, but it will be able to do this whenever it shall have turned to account its now waste labor, and made a market on the land for the products of which so large a portion is now wasted; for when it shall have protected its planters in their efforts to bring the loom and the anvil to take their natural places by the side of the food and the cotton, the fuel and the ore, it will need large quantities of the products of other lands, and then it will have large and valuable return cargoes, which now it cannot have.

* See page 267.

We are told, however, that "the manufacture of cotton yarns is now rapidly extending in Georgia, Alabama, and Tennessee." How far this is true may be judged from the fact, that the consumption of cotton in the States south of Virginia, which grew, during the existence and under the influence of the tariff of 1842, to *one hundred and ten thousand bales*, has now fallen to *sixty thousand bales*; and in Virginia and Maryland the per centage of diminution has been, I believe, much greater. The competition of the South with the North grew under protection, and *it tends to disappear as protection is withdrawn*, as any one may satisfy himself who will inquire what are the prospects of the suspended mills of Maryland and Virginia as compared with those of similar mills in Rhode Island and Massachusetts. The question is likely, as I think, to be, not "What has become of the cotton mills of New-England?" but "What what has become of those of the Southern and Western States?"—for *the direct tendency of the present policy is that of placing the producer of cotton more and more at the mercy of those who possess the machinery by which it is to be converted into cloth*. Had the tariff of 1842 been permitted to remain in existence, the mills of Lowell and Providence would by this time have almost abandoned to the South the production of coarse cloths, and the South and West would now be purchasing fine ones made at Lowell and Providence with coarse ones made in their own cotton-fields, and all would now be flourishing together, thus proving the perfect harmony of interests resulting from the adoption of that American system which looks to protection as the sure, the profitable, the speedy, and indeed the only means of arriving at perfect freedom of trade.

The "profits taken from England" will, we are here told, increase "the capacity of the continental States to buy from us," and yet the same persons who tell us this are daily employed in assuring us that our own capacity to purchase increases as we add to the profits of England by sending to her our food and our cotton to be exchanged for cloth and iron; and this they say in the face of the fact, that the consumption of iron and of cotton and woollen cloth, domestic and foreign, has fallen to the level of that of 1845-6, notwithstanding the vast increase of population. That reduction has taken place under the tariff of 1846, and instead of the two sections of the Union working together for mutual benefit, the one producing yarns and coarse cloths requiring little labor for their manufacture, and the other producing finer ones requiring more labor, each thus making a market for the products of the other, both are seen contending for the market afforded by coarse cloths, and both destroying each other—a natural consequence of the adoption of the *British* free-trade system which looks to subjecting the planters and farmers of the world to the will of the owners of a *quantity of machinery, the whole value of which in Great Britain and the United States is not equal to one year's loss to our own farmers and planters from the want of a market on the land for its products*. In this contest the South is being worsted, as is obvious from the fact that the Southern and Western consumption of cotton has fallen in a single year almost one half; and yet under these circumstances it is that it is supposed that that portion of the Union is to be benefited by an alteration of the tariff of Germany such as shall secure the free admission of coarse Southern cloths in exchange for the finer ones produced in Germany! They drive Lowell from the production of fine cloths, and thus produce a state of things that destroys their own manufacture of coarse ones, and then look abroad for a market for cloths that they are ceasing to produce! It is surely time that the planter should open his eyes to the fact that his interests and those of his fellow-citizens are the same, and that he cannot profit by a

system that is destroying the power to consume his great staple. Had he permitted the cotton manufacture to go ahead, the cloth that would this day be required in the Union for the consumption of its people would be absorbing little short of a million of bales, and to those who doubt this fact, I would recommend an examination of the fact that the consumption of cotton, *per head*, almost doubled in amount from 1843 to 1847, and that at the close of the period subject to the tariff of 1842 the tendency to increase was far greater than it had ever been, because the production of cloth, and iron, and fuel, and of a thousand other commodities to be given in exchange for cotton, was increasing with a rapidity totally unexampled. The farmer or planter must be blind that supposes his interests likely to be benefited by any system of policy that diminishes the demand for his products, and that diminution is the inevitable consequence of any system like that of '46, the tendency of which is to increase the distance between the consumer and the producer. Equally blind must be the man who fails to see that the true interests of the North and the South, the East and the West, are in perfect harmony with each other. *British* free trade seeks to increase the volume of agricultural products seeking to pass to the consumer through the ships and mills of Britain, thereby enabling the owner of British ships and mills to enrich themselves at the expense of the farmers and planters of the world. *American* free trade seeks to diminish the volume and increase the value of agricultural products fitted for direct exchange with the consumer of the world at large, thus diminishing the power of Britain to support herself by the taxation of the farmers and planters of the world. And it is to the adoption of this system that the South is to look for the power of establishing and maintaining direct intercourse.

AGRICULTURE OF NOTTINGHAMSHIRE, ENGLAND.

[*Concluded.*]

ARTIFICIAL MANURES.

Bones may be considered after farm-yard manure to stand next in estimation for light soils, and on them the farmer chiefly relies. They are used principally for the turnip crop, in quantity from twelve to twenty bushels an acre. They are mixed generally with a proportion of rape-cake or guano, and are found far more efficacious when their latent properties are thus, stimulated.

Rape-cake is also used for the turnip crop to a great extent, as well as for wheat, in quantity from 5 to 7 cwt. to the acre. It is, when applied for wheat, mostly sown by the hand on the pressed furrow, and harrowed in at the same time with the seed. Some prefer to apply it in the spring as a top-dressing, and hold the opinion that a less quantity laid on then is equal to a greater applied in the previous autumn.

Shoddy has been much in demand for some years past, and has proved itself a most valuable manure. For the information of those who may not be acquainted with it, we may observe that it is the waste from woollen cloth mills, which is saturated with an oily matter, and is more lasting in its effects than most artificial manures. In price it varies according to quality from 40s. to 45s. a ton. It is used both for turnips and wheat. Not less than a ton an acre should be applied, as it is difficult to separate, and consequently to

spread equally over the land. Its virtues are not exhausted in less than two, or even three years, from its decomposing slowly.

Guano was used very generally last year for the turnip crop, in small quantities, by way of experiment; but the summer being very dry it failed; if another trial were made we cannot say precisely what the result would be. It is unquestionably a powerful manure when pure, but we fear is very liable to be adulterated. The African has been chiefly used in these districts. Another year's trial will go far to determine its value, and fix its future price.

Nitrate of soda was used some years ago, but from its discontinuance we presume that the popularity which at one time it was likely to acquire is on the wane, if its fate be not already sealed.

Soot is much liked as a top-dressing for wheat in the spring, applied at the rate of 5 quarters an acre; it may be bought at Sheffield for 2s. 6d. a quarter, forming a cheap and very remunerative manure.

On the true value of lime as a manure opinion is not so unanimous as would appear desirable. By some good farmers it is regarded as essentially necessary; whilst by others of equal spirit and enterprise it is altogether neglected.

The aid of science is wanted to ascertain the relative value of lime brought from various quarries in Yorkshire and Derbyshire—both of which kinds are in common use in these districts. The Yorkshire lime brought from Brotherton and Knottingley was held by Mr. Lucas, at the late meeting of the "British Association for the Advancement of Science" at York, to be next in value to the mountain limestone of that county, from its containing the next largest amount, namely, 93½ per cent., of carbonate of lime, and comparatively little of the carbonate of magnesia. Of this lime, as much as 120 or 150 bushels an acre is often applied at a dressing, and even more, and it is found to answer well; whilst of some of the Derbyshire lime, also in general use, not more than 60 or 70 bushels can be applied without positive injury being sustained for years afterwards.

It is necessary to observe, that the Derbyshire lime here alluded to is not the mountain limestone of that county, which is equally valuable to the farmer with the mountain limestone of Yorkshire, and most valuable for agricultural purposes, being said to contain 98½ per cent. of pure carbonate of lime; but it is a limestone highly impregnated with magnesia, and identical with the magnesian lime of Yorkshire, which is said to contain of carbonate of lime only 62½ per cent., and of carbonate of magnesia 36¾ per cent.; and by Mr. Lucas's statement, therefore, of proportionately less value.

An idea exists in the minds of many practical men, which we think an erroneous one, that if two tons an acre of the same Derbyshire magnesian lime be applied, as good a purpose will be answered as if four tons from Knottingley be used, but that it is dangerous, indeed highly prejudicial to the land, to put on more than two tons at one dressing.

There must surely be a great mistake in this, for if carbonate of lime be the valuable constituent, and carbonate of magnesia a baneful one, a very different conclusion must be come to. Let us see how the relative proportions of these in the two dressings stand as they are mostly applied. The four tons of Knottingley lime will contain of valuable matter 93½ per cent. each, 374 parts, whilst the two tons of Derbyshire will contain at 62½ per cent. only 125 parts, or nearly two thirds less; whilst of baneful matter the Knottingley will have but 24 parts at 6 per cent. per ton, and the Derbyshire at 36¾ per cent. 73½, or two thirds more: a reason sufficient to account for

the injurious effects which are visible after a heavy dressing of the latter, and one which is worthy the attention of those who are interested.

It has been replied by those who favor the use of the Derbyshire lime, that the advantage to be derived from any lime, as a manure, consists in its acting as a solvent rather than in its fructifying property; and that if a smaller quantity of magnesian lime contain the requisite amount of such solvent quality, it is needless to go to greater expense in the purchase of lime of another kind. But this reply does not explain the fact of so small an increased quantity of the magnesian lime producing effects decidedly injurious, and such as cannot result from a solvent in whatever quantity applied; whereas by the principle held by Mr. Lucas, they are fully accounted for: and it appears from statements made by him to be established that the true value of any lime consists in the comparatively large amount it contains of carbonate of lime in proportion to that of carbonate of magnesia, and that the more of the latter constituent is possessed by such lime, the less valuable it will be to the farmer.

IMPLEMENTS.

Every farmer now has his own threshing-machine either fixed or portable, or he hires one by the day, and the bulk of the corn is so threshed. Experience has taught him that he can not only thresh out his grain by machinery at less expense than by the flail, but that the condition of the grain is thereby better preserved, whilst the saving leaves him a surplus fund to spend on other necessary work of his farm. Where there is a fixed machine, as on most of the large farms, a provision is made for cutting chaff, by a strap attached to the threshing-machine, when required, which effects a great saving in labor.

It has been noticed that the common swing plough is in general use, and it is doubtful whether a better could be substituted, at least on the light soils, where the ploughing is, as a whole, admirably performed. On the heavy soils, perhaps, at certain seasons when the land becomes very dry and hard, some of the improved wheel ploughs might be brought with advantage into further use, from the greater power they possess.

"Ducie's drag," or the "Uley cultivator," and various others made in the different localities, are generally employed, especially on the light soils. The harrows have mostly the frame of wood; some few, however, are of iron. Whichever kind may be used, they are found more efficient on strong land when coupled together; but on working out the quitch on the light soils are better separate.

Horse-hoes are used of various kinds adapted to the soil. The Scotch is among the best for heavy land, the shares of which act on the same principle as those of the cultivator. The advantage they have over the common horse-hoe consists in going deeper, and bringing, by the forward inclination of the shares, the weeds effectually to the surface. They are, however, heavier than necessary for light land, where slighter ones are more convenient.

For sowing turnips on ridges the Northumberland drill is by far the most common, doing a single ridge at a time, with a separate box for artificial manures, which are deposited by a separate spout below the seed, so as to occasion no injury to it. The corn-drills are on the same principle as the large Suffolk drill, capable of drilling with great nicety 10 or 15 statute acres a day; and, by introducing a change of cups, will deposit seed of every size from the turnip to the bean.

Crosskill's clod-crusher is an invaluable implement for strong land, but too expensive for farmers in general to purchase. A public one in each parish

might answer every necessary purpose, and would cost but a trifle to each individual. It has been found of great service on clover-ley wheat in the spring when threatened with the grub. Where, however, the land is very light, it should be previously rolled with a common light roller, otherwise there is danger of the wheat being carried away by the indentations of the implement.

Heavy metal and stone rollers of the common kind are also in use for wheat in the spring on the sands, but they are inferior to Crosskill's, being more uncertain and unequal in their pressure.

An excellent implement has lately been introduced from Yorkshire for raking barley. It consists of movable teeth placed about three inches apart, which rise or fall with the inequalities of the ground. It is drawn by a horse, and can be emptied of its contents, without any interruption to the work, by a crank which raises the whole of the teeth at the same time, and so allows the contents to fall.

Wagons and carts are both in general use throughout the county. Some, nevertheless, who have tried the one-horse cart exclusively, approve of it, as containing every requisite, and are prepared to cast aside, in consequence, their other carriages. We feel convinced that experience will disabuse the minds of many of the notion that one-horse carts are of themselves insufficient for every purpose upon the farm; and had not the Royal Agricultural Society offered a prize for the best essay on their advantages, which will therefore render unnecessary any remarks of ours, we should proceed to give our reasons, founded on experience, for thus recommending them in preference to any other kind of carriage, not only under particular circumstances, but under all ordinary circumstances in which they are required.

ALLOTMENTS TO COTTAGERS.

Much has been said of late years both for and against the expediency of allotting land to the poor. As we cannot but consider it a question calculated materially to affect the comfort of that class for whose benefit the allotments have been in most cases granted, we have made it a subject of inquiry in different parts of the county, as far as our means would admit, and the result of such inquiry has been decidedly in favor of the system. We cannot but regard it as one adapted not only to improve the condition of the poor themselves, but also, by a diminution of pauperism, to relieve the classes above them, who contribute chiefly to their support; nor does it, as has been asserted, render the laborer careless of or indifferent to his employer.

If there be, in a highly refined and luxurious country like our own, one sight more painful than another, it is to see the honest laborer asking from door to door "for leave to toil," that he may thereby get bread, but asking in vain. And why does he ask in vain? Is it because he asks of men not capable of feeling for their fellows? We answer, No; but too often because he who would willingly be the employer is in as hard straits as he who craves to be the employed. This is no imaginary case, but an undeniable fact, the constant recurrence of which, under our own eyes, has induced us to allude to it. Can we wonder at men, born with the feelings of Englishmen, thus disappointed, turning droopingly and despondingly away, inwardly feeling that "no man careth for them," and that our very cattle are regarded more than they? Surely this is not a question to be viewed merely through the eye of the political economist, but one which addresses itself to our best feelings as men, and to effect a remedy for which demands our best energies.

Let us therefore seek to show the poor and honest man that he is cared for, and that his interests and happiness are identical with our own; and seek,

before it be too late, to raise his broken spirit and dejected mien—to restore to him that feeling of independence which results from his respecting himself, and is the cause of his being respected by others. As a means to so desirable an end, let him have something in which to interest himself, and in the success of which he is directly concerned; and nothing offers so rational an object of his care as his own small holding of land.

We do not propose to enter into the minutiae of the question, as to what is the most desirable quantity for each individual to hold, or what the proper amount of rental, with many other details which experience alone can determine; but shall content ourselves with referring to the humane and truly noble example which has been offered to the imitation of the landowners of Nottinghamshire by his Grace the Duke of Newcastle. We know from his Grace's agent, Mr. Wilmot, that after long experience of the system as tried by him, the result has proved most satisfactory; that a tenant holding an allotment under his Grace is scarcely ever in arrear with his rent; that, on the contrary, it is paid most punctually, and with an expression of gratitude as for a favor received—a benefit conferred; and when it is stated that the Duke of Newcastle has let off upon his estates about 2,000 gardens, it will be admitted that an opinion from Mr. Wilmot has more than ordinary weight.

The rate of wages in this county is higher than the average throughout the country. Even with the present depressed prices, we believe that 2s. per day is more generally given than any thing lower; and when the price of produce will admit, it is raised to 2s. 3d. a day. When the work is task-work, the laborer will frequently make 2s. 6d. or 3s. a day during the summer months. Where men have constant employment with such wages, they may be considered as well enough off; but it is the absence in some parts of the county, and particularly so in the clay districts during the winter months, of constant employment which occasions the evil complained of, in the hope of mitigating which the foregoing remarks have been introduced.

WATER-MEADOWS.

Amongst the most striking improvements which have taken place during the past half-century, the water-meadows of the Duke of Portland claim an especial notice. Mr. Denison, however, having given a most lucid and complete statement of them in the Society's Journal, part iv., vol. i., for 1840, renders unnecessary our saying more of them here than to mention shortly the leading facts as given by him.

These meadows comprise an area of upwards of 300 acres of land, extending over a distance of about seven miles in length. They are watered by the river Maun, as it flows eastward from the town of Mansfield. The value of the land has been raised from the annual sum of 80*l.* to that of 3,660*l.*, at a cost (from their commencement in 1816 to their completion in 1837) of 40,000*l.* The profit upon each acre, after defraying all expenses, is computed at nearly 12*l.* a year, without taking into consideration the great benefit they are to the arable land adjoining them, which, in the words of Mr. Denison, they "enrich to an extent of five times that of their own."

Stretching through a dry sandy district for so long a distance, and thus fertilizing increasingly land so dependent on foreign aid, must show at a glance their almost incalculable value. As a triumph of art, they must be considered one of the most brilliant and complete of any that is known, reflecting credit equally on the talents of the noble owner as projector, and on the

intelligence of Mr. Tebbet as executor of the works; nor are they unworthy of comparison even with those of a Bridgewater and a Brindley.

THE CARS.

Allusion has already been made to a district of land situated in the extreme northern part of the county, comprising an area of about 6,000 acres of reclaimed bog-land, a small portion of what was formerly designated the "Level of Hatfield Chase," once a vast morass of upwards of 65,000 acres, which extended, in a northerly direction, as far as Hatfield and Thorne in Yorkshire. The first attempt to drain this extensive waste was made by Dutch settlers, of whom the principal was Sir Cornelius Vermuyden, about the middle of the seventeenth century. These enterprising men effected, in some measure, the object they attempted, for which they received ample compensation by becoming proprietors of a portion, and that not an inconsiderable one, of the land they had reclaimed. The difficulties, however, of effecting a perfect drainage were of no ordinary character, from the largeness of the tract of land, all lying on a dead level; the soil being moreover highly porous—a dark peat of spongy quality; and surrounded on two sides by the rivers Trent and Ouse, which were at that time liable constantly to overflow their banks, and so inundate this vast swamp. The very banks that were raised for its security were of the same trembling bog, and consequently little likely to resist the fearful floods which at that time not unfrequently descended these large rivers.

It is to the 6,000 acres which are lying in Nottinghamshire, separated from the far larger part in Lincolnshire and Yorkshire, and which are divided by the river Idle, as it forms for some miles the northern boundary of this county, that we propose to confine our remarks. This part belongs to the several parishes of Misterton, Walkeringham, Gringley-on-the-Hill, Everton, and Scaftworth, which villages form a semicircle of several miles on its southern side, the high ground on which some of them are built resembling headlands on a sea-coast. These vast plains, when seen from the higher grounds, as they stretch for upwards of twenty miles in a northerly direction, without any object to break the monotony of the scene, are very striking; and from the great likeness they bear to the Pontine Marshes, over which the sea once unquestionably flowed, leave an impression that such was their case in ages long gone by. The natural productions of this interesting deposit were high reeds, and flags with edges indented like those of a sickle, amidst gigantic tussac grass, which formed the haunts of various kinds of wild fowl, and where was heard the mournful booming of the bittern, now extinct.

It is less than half a century since this morass was first attempted to be brought into cultivation. At that time it was so absolutely a bog that no horse could in many parts be used for ploughing it, and this operation was performed by manual labor. As the drainage was improved, the land became firmer; and from the abundant crops of rape and oats which it at first produced, gave promise of a fruitfulness quite extraordinary, which was for a time fully realized. This remarkable fertility was moreover increased by a system of paring and burning—an operation of easy accomplishment on a porous soil, but which in the end proved decidedly injurious to the land, by reducing its surface below the drainage then provided for it, although probably the natural compression arising from its being laid dry occasionally was more the cause of that inconvenience than the paring and burning. From whatever cause this might arise, the consequence was the same; and serious apprehensions were for a time entertained lest a considerable part, if not the

whole, of this tract of valuable land would be forced out of cultivation through the want of drainage; but at length steam-power was suggested as a remedy, and it has since proved quite successful.

In 1828 a steam-engine was erected of forty-horse power, at a cost of upwards of 6,000*l.*, for lifting the water by a wheel. The engine is placed upon the main drain, about three quarters of a mile from the river Trent, into which the drainage of these cars empties itself; but unfortunately, when high tides flowed up that river, there was frequent interruption to the drainage, from the water in the river being higher than that in the drain; and it would have flowed in upon the cars had not flood-gates prevented it. By placing the engine at some distance from the Trent, a reservoir was then formed in the main drain, within that space flanked by high banks; and so by lifting the water into this reservoir to a higher level than the water of the Trent, it is enabled to fall into that river at all times.

The wheel employed for lifting the water revolves between two stone walls, in a space of about 27 inches wide, through which the whole of the water is driven. The wheel itself is formed of cast-metal sides, with wooden paddles between, placed ingeniously at a certain angle which enables the wheel to lift the water above its own centre: thus a wheel of 33 feet diameter creates an artificial drainage equal to more than its radius of 16½ feet. Flood-gates are again placed immediately before the wheel, to prevent the water coming back on the wheel ceasing to revolve.

About ten years afterwards it was found necessary to erect an additional engine of equal or superior power to the one already in use, before the drainage could be rendered perfect. This was accordingly done on the opposite bank of the drain by the proprietors, at a cost of 5,000*l.* Thus the total cost of the two has been little short of 12,000*l.*, besides an annual expenditure of from 3*s.* to 4*s.* an acre for the double purpose of working the engines and cleansing the drains. Absolute command of the water is now effected; and a provision has been made of incalculable value to the occupier of these cars, by introducing, during the summer months, water from the adjoining river Idle, as a supply for the stock. It is kept at any height that is thought advisable by means of stanchions, the regulation of which occupies the time and attention of the engineer during those months when the engines are less frequently required.

In conclusion, the fields in the clays which Mr. Lowe spoke of as then open have in nearly every instance been inclosed, besides which a considerable breadth of forest-land has on the western side been brought into cultivation. Extensive tracts of land still remain waste, as it is doubted whether they are worth the expense of cultivation, being in general a light sand of the worst description; but that they might be usefully and profitably planted there can exist no question, and as they are chiefly in the possession of the large landed proprietors, we may hope that the success which has already attended their efforts in this direction will encourage them in time to complete what they have begun.

Without any wish, on the one hand, to arrogate to the farmers of Notts any thing beyond what is their due, it is, on the other hand, our duty, in giving a faithful report, to award to them all just praise. When the increased productiveness—both in the quantity of grain grown, as well as of live stock kept—has been doubled, trebled, and in some instances quadrupled, we may fearlessly claim for the occupiers of such districts a position not to be surpassed for spirit and enterprise by any in the United Kingdom; for I trust

not be lost sight of that they have great difficulties to contend with, arising from physical causes, at least on the western side of the county, in a soil naturally poor, and which is greatly dependent on a sufficient supply of moisture, of which it does not, according to meteorological observations, receive even an average share.

These difficulties have nevertheless been manfully met, and, as far as any exertions could avail, have been as successfully overcome. Whatever the spirited investment of their capital could achieve has been realized; and it is to high farming, in a great measure, that the county owes its present distinguished place amongst its neighbors.

As regards the application of manures these farmers have, as a body of men, by patient observation, practically discovered that which Dr. Liebig has theoretically affirmed to be necessary to insure success when he asks whether "it be possible, after so many decisive investigations into the origin of the elements of animals and vegetables, the use of the alkalies of lime and the phosphates, any doubt can exist as to the principles upon which a rational agriculture depends? Can the art of agriculture be based upon any thing but the restitution of a disturbed equilibrium? Can it be imagined that any country, however rich and fertile, will maintain its fertility without the restoration, in some form of manure, of those elements which have been removed from the soil, and which cannot be replaced by the atmosphere? Must not the same fate await every such country which has actually befallen the once prolific soil of Virginia, now in many parts no longer able to grow its former staple productions—wheat and tobacco?" Let not the farmers of Nottinghamshire, however, suppose that all has been done that can be done, for they may reasonably hope that science will propose further improvements not only in the accommodation of the *kinds* of manures to particular crops, but also in the *quantity* and in the *state* in which they should be applied; in other words, in supplying most economically and effectually those constituents to the soil which are essential to plants.

But let it be remembered, particularly by the farmers of the clay district, that the fullest advantages of this branch of agriculture cannot result until the injurious superfluities have been abstracted by a thorough drainage.

Bolham Hall, near Retford.

COAL IN NORTH CAROLINA.

"WE learn from a correspondent that an extensive coal-field has been discovered in North Carolina, on the Cape Fear and Deep rivers, and is now being opened by a company of Northern capitalists, who have recently purchased it."—*Exchange paper.*

From every quarter of the country we hear of new discoveries of coal, iron ore, copper ore, and every other description of mineral that *would be wealth*, if the planters and farmers of the country would but determine to bring to their sides the laborers and the artisans required for their extraction and their conversion into the forms fitting them for their consumption. The South abounds in coal and ore, and their extraction and conversion would make a market for their food and cotton; but they have not yet learned that the first tax upon the farmer and planter is the cost of transportation, and that *it must be paid by them*, and therefore it is that they neglect their own coal and their own ore, and *export to England their bonds, bearing interest*, to be given in exchange for iron that could be made at home, by aid of the labor that is wasted among themselves for want of a diversification of employments.

THE AMERICAN COTTON GIN.

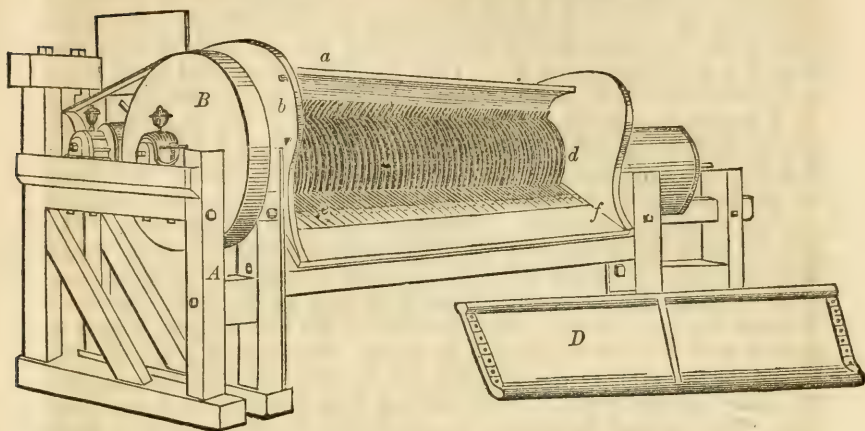


FIG. 1.

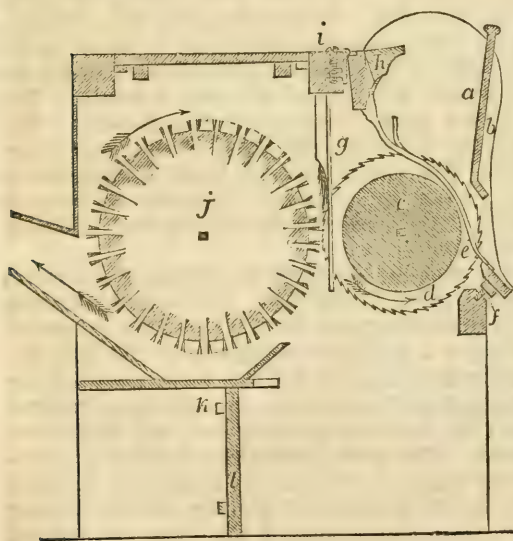


FIG. 2.

WHILE it is to be presumed that all our readers are perfectly acquainted with most of the various kinds of cotton fabrics now in use, it is very probable that many have never seen the wonderful but simple machine, which, to use the expression of the inventor, enables "one individual to perform the work of a thousand," in the preparation of the material for manufacturing purposes. The Cotton Gin, an excellent representation of which is given in the accompanying engravings, has most astonishingly revolutionized the manufacture of that staple

in this country and throughout the world. It embraces two principles for the removal of the seed from the wool. The saws playing between metal ribs, drawing in the cotton between them, and thus leaving the seeds behind, like drawing wool over comb teeth, is one principle; and the other is, the removal of the cotton cleaned from the seeds, by a brush roller, like a stripper fan cylinder, which, at the same time, throws the cotton out into the cotton room, by a spout leading from the gin. This will convey an idea of its principle and action; no machine can be more simple, and perform such results. Description: Fig. 1 is a perspective view, and Fig. 2 is a vertical side section.

The letters refer to like parts on both figures: *A* represents the frame of the machine, which may be made of wood or iron; *B* is a band pulley, to drive it by either steam, water, or horse-power; *a* is the box to feed the uncleaned cotton into the saws; it is technically termed the Grate-fall-head. It is made with heads of cast iron, and the lower and back sides are made of metal ribs, termed a grate, represented at *e*. These metal ribs are screwed firmly down to the wood-work in the front at *f*, termed the *breast*, and the saws represented by *d*, project through the ribs from one to two inches. The upper and back part of the feed box, called the *hollow*, is hung upon hinges, to be easily raised; *l*, in Fig. 2, is a seed board in front, and forms part of the breast. It is hung on pivots at the top, at each end, so that its bottom can be swung out, and the box emptied at any time. Its bottom is fastened by slide bolts. The grate of metal ribs is hung by the hinges to the top timber *h*, of the frame above the saws; *c* is the saw roller, in other words, a roller on which all the saws, *d*, are secured. It is made of wood, and fixed upon an iron shaft. The wood is turned true, and the saws, which are made of the best steel, are secured in grooves made for their reception in the wood. There is a set of wooden ribs behind the saw cylinder at *g*, and there is a row of bristles (Fig. 1) to separate the motes and dirt from the cotton that has been drawn through the metal ribs. The bottom of the said box may be inclined to one side, so as to direct the cotton seeds into the receptacle *D*. *J* is a brush roller, running behind the ribs, the whole length of the saw roller. It takes the cotton from the saws, and sends it out by the spout behind, into the cotton room, as shown by the straight arrow. This brush roller is about twenty inches in diameter, and the wood has slits running lengthwise in it, between the rows of bristles. The brush roller must always have a greater surface-speed than the saws. The air receives a rapid motion by the centrifugal action of the brush roller. Below and behind the brush, there is a sliding mote board *k*, which can be slid backward and forward; *l* is a bottom board. The saws can be set at the proper angle to the curve of the metal ribs, by a sliding butt, extending down, and operated by a set screw *s*.

There can be no doubt but the great increase of the consumption of cotton can be traced to the invention of the Cotton Gin. The seed of the cotton plant adheres so tenaciously to the wool, as to be very difficult of separation, and, without being separated, it is impossible to manufacture the wool into cloth. Before the invention of the Cotton Gin, it took a female one whole day to clean one pound of cotton, and the best machine—the roller gin with fluted rolls—which was in use in 1788, for cleaning cotton, could only finish about thirty pounds in twelve hours. The great consumption of cotton for manufacturing is attributable to its cheapness; but it never would have become a cheap fibrous material by the old processes of cleaning, and our country never would have become a great cotton country, if the Cotton Gin had not been invented.

It was early discovered by Tench Coxe, Esq., and a number of enterprising gentlemen of the South, that any amount of cotton could be raised in the Carolinas and Georgia; but, owing to the difficulty of cleaning it, a great perpendicular stood in the path of its extensive cultivation. In 1792, while the continent of Europe resounded only with the tread of armed hosts in battle array, England, separated from the strife, became the workshop of the world, and the demand for her manufactures was greater than she could supply; so likewise was the demand for cotton. It was at this juncture that a mechanical genius arose to meet, it may be said, the wants of the world. ELI WHITNEY, a native of Worcester, Mass., a highly educated and ingenious man, while a

guest with the widow of GENERAL GREENE, in Savannah, Geo., was appealed to by that lady to devote his attention to the construction of a machine to gin cotton, as it was in vain to think of raising it for the market while the means to clean it were so inefficient. Whitney at once commenced experimenting; and, after much study and toil, completed his Cotton Gin in the early part of 1793. At its first exhibition, all who saw it were astonished with its power, for it separated more cotton from the seed in one hour than one man could do, by the old method, in many months.

The cotton fields of America embrace an area of 500,000 square miles, and there are \$500,000,000 invested in their cultivation. The exports of manufactured cotton goods for 1850, by Great Britain, amounted to \$350,000,000. The export of cotton from the United States exceeds in importance that of all other raw materials; and the mainspring of all this is traceable to the Cotton Gin, which, at the present day—like the steam-engine, as it came from the hands of Watt—is the same in every essential feature as the day in which it came forth from the plastic hands of the ingenious WHITNEY.

ON THE REARING OF CATTLE.

BY C. W. WOOD, OF WOODHOUSE, ENGLAND.

How few farmers are there who understand the rationale, the why and wherefore, of most of their agricultural operations; and what chance is there for improvement when they are content to follow blindly in the beaten track of their predecessors, without inquiring if there be not a better path? What chagrin and disappointment might have been avoided, and how much time and money saved, by many importers and purchasers of improved cattle, had they read and acted upon the following advice, which we consider one of the best, because one of the most practical and comprehensive, contributions ever made to the agricultural press.

The heading of this article formed the subject of a paper read by Mr. Wood at the June quarterly meeting of the Loughborough Agricultural Association. Mr. Wood confined himself strictly to the subject, not of breeding or of fattening, but of rearing stock; treating it under the following heads:—1. The Constitution and Economy of Agricultural Cattle. 2. The State and Condition in which they exist. 3. Their Food and General Management.

In the consideration of the substances which compose the animal frame and their qualities, a key may be found to many secrets in the general management of young cattle, particularly as regards their habits and their food. Science points out to us a frame-work of bones, (the principal ingredients of which are phosphorus and lime,) to give form, uprightness, stability, and strength to the machine; next, an attachment of muscle, (composed chiefly of fibrin and gluten,) to give motion and activity to the body; and lastly, a respiratory and circulating apparatus, to supply heat, nourishment, and life to the whole, in order to resist the chemical powers from without. Seeing, therefore, that we have a mixed machine to deal with, it is self-evident that mixed or combined means are needed to carry out the first intentions of nature, and without which life could not exist. We must have, first, starch or sugar, to supply carbon for respiration; second, fat or oil, to keep up the fat which exists, more or less, in the bodies of all animals; third, gluten or fibrin, to supply muscle and cartilage; fourth, earthy phosphates, for the supply of bones; and fifth, saline substances, sulphates and chlorides, to replace what is daily rejected in the excretions.

The second proposition requires to be clearly defined, viz.: the state or con-

dition of animals. We find this to be threefold, each of which requires our anxious attention. We have, first, a foetal state, or one in connection with the mother, which exists before birth; secondly, a state of growth or development, which comprehends the period from birth to maturity; and thirdly, the state of the full-grown animal.

We have no control over the condition of the foetal animal, except through the medium of the mother, of the general management of which I shall speak presently. Of the second condition, nature must be closely observed and carefully imitated, in order that the third or ultimate condition may be healthy, full-grown, and useful—the great object of the farmer, to repay him for all his expense, anxiety, and toil.

It is a very false economy to stint the allowance of food to a young animal. New milk, or the flour of all leguminous plants, such as beans, peas, &c., which contain casein, with an infusion of oil-cake* to promote fat, seems nearly to approximate to the composition of ordinary milk, skimmed milk being destitute of the principal ingredient required by nature for the support of respiration. This, in addition to warmth and cleanliness, will always keep the vital powers predominant over the chemical—the cardinal point in the rearing of cattle.

I now come to my third proposition, viz.: “their food and general management;” and a more important and profitable subject cannot engage your attention. It must be considered in detail. I will begin, therefore, as I proposed, with the foetal condition of the animal, and take a calf as a general example. It, like all other animals, is supported and nourished by the blood circulating from the mother through its own body, from the moment of its earliest formation up to the time of its birth; which blood contains, ready formed, all the various substances which are necessary for its formation. In addition, therefore, to all that is necessary for its own sustenance and existence, the cow forms a new and complete animal; it also secretes food for this new animal, which is to sustain and increase it for a considerable time after its birth; for the milk, like the blood, is the most perfect food, and contains every substance of which the body is built. When sucking is at an end, should we not imitate nature, a sure and unerring guide to philosophic truth? Any animal—whether cow, horse, sheep, or pig—having its own existence to support, (I will add, in agricultural language, “in good condition,”) a new animal to form, and one also to feed, is, to say the least of it, in a most important and interesting condition. Is such an animal to be sent to feed upon a scanty pasture, to be turned into a miserable and wet farm-yard, or kept upon straw and an occasional turnip, until she is little better than a bag of bones; and then, forsooth, to expect a fine healthy offspring, with an abundance of milk for its sustenance? And if such brilliant expectations are not realized, the fault is to be laid upon the poor beast—“She is not a good milker;” or to the land—“It will not do for rearing, or for dairy purposes;” in short, upon any thing rather than upon their own stupid, ignorant, and thoughtless minds. Breeding stock, gentlemen, cannot be kept too well; they are, in truth, feeding stock to others, and ought to have the best a farm affords; the best pastures in the summer, with cabbage and common turnips in the autumn; Swedes, sweet straw, oil-cake, [corn meal,] and hay in the winter; and in the spring after calving, some mangel-wurtzel, steamed potatoes, and hay, until the grass time again.

* Indian corn, the glory of American agriculture, is more than an equivalent for this main-stay of the British feeder.—Ed.

To nourish the young animal in the womb of its mother, an additional quantity of food must be given, and this quantity must be increased as the state of pregnancy advances; and the kind of additional food must readily supply the materials of the growing bones and muscles of the foetus, and contain a larger quantity of starch or sugar, also, than the mother in her ordinary state would require. This is required by the circumstance that the mother must now breathe for herself and her young; the quantity of blood is increased, more oxygen is taken in the lungs, and consequently more carbonic acid is given off. A certain proportion of bone and muscle must also be supplied to the young animal by the food given to the mother, or the bones and muscles of the mother herself will be laid under contribution to supply it. This must be effected by the quantity of phosphates, gluten, fibrin, or casein, which are given in the food with which the mother is fed.

An animal thus kept will be in the most profitable condition to rear its young; and bear in mind, that as the calf grows rapidly, the food it requires increases daily with its bulk, and the demands upon the mother every day become greater. At this period, therefore, the cow must obtain larger supplies of food to sustain herself and to produce a sufficient quantity of milk for her calf. If, then, adequate supplies are not given, a portion is daily taken from her own substance, which causes her to be lean and feeble, and her young stunted and puny in its growth.

What has been said regarding the food given to the cow, will be more or less effective in promoting the growth of the young animal fed solely on milk: when richer in curd, it will promote more muscle; when richer in phosphates, more bone; and in butter, more fat. Milk is a perfect food for a growing animal; nothing is wanted in it. The mother selects all the ingredients of this perfect food from the substances which are mingled in her stomach from the food she eats; she changes them chemically in such a degree as to present them to the young animal in a state in which it can most easily, and with least labor, employ them for sustaining its body, and all this at a given and appointed moment of time. In due time, the young animal begins to feed for itself, and then the mother improves in condition. Warmth, exercise, and good food are all that then is required; always bearing in mind that, as nature prepares the food for young animals in a state in which they can most easily digest it, so we should prepare by boiling or steaming all dry food and roots for the same purpose. In the growing animal, the food has a double function to perform—it must sustain and it must increase the body. Hence, whatever tends to decrease the sustaining quantity, (and cold, exercise, and uneasiness do so,) will tend in an equal degree to lessen the value of a given weight of food in adding to the weight of an animal's body. To the pregnant and the milking cow, the same remarks apply. The custom of allowing young cattle to remain during the whole winter in straw-yards, exposed to all the variations of weather, cannot be too loudly condemned. Oil-cake, it is true, which is sometimes given in large quantities, makes some small amends by the supply of carbon to the system; but if a warm, dry, and clean shed was substituted, with turnips instead of cake, the condition and quality of the animal would be very much improved, and a considerable saving of expense be effected, to say nothing of the improvement of the manure.

All vegetables contain, ready formed, (which they extract from the food on which they live,) the substances of which the parts of animals are composed. The animal consequently draws, ready formed, the materials of its own body from the vegetable food it eats. The starch, sugar, and gum in vegetables, are to supply carbon for respiration. Carnivorous animals obtain it from the

fat of the food; starving animals from the fat of their own bodies; and young animals, which live upon milk, by the sugar it contains. In the young animal we find an excess of life; it has to increase as well as sustain itself. In the full-grown animal we find the daily waste of substance, which is carried out of the body in the excretions, made up by the gluten, phosphates, and the saline substances in the food, and a balance kept up between the powers of life and the bodily structure; it simply has to sustain itself. In the old animal, when life is diminished, we observe a proportionate decrease of bodily substance.

It is interesting and wonderful when we thus trace the existence of the bodily structure of all animals ready formed in the vegetable, which property in vegetables is formed during their growth—is derived from sources purely gaseous and inorganic, by chemical, mechanical, and physical operations. It is the duty of the practical farmer to adopt these methods for improving the soil; but this forms no part of my subject.

Sheep.—The additional value to your flock by this mode of management, and especially in giving them some dry food, such as hay or corn, before lambing, is very great. It gives firmness of fibre, and adds greater vigor to life, a greater activity to the vital powers, by which alone it is capable of resisting disease, and of arriving at an early maturity. The improvement of the fleece, by such a course, will be fifty per cent. The old breed were kept from two years to two years and a half old before sold, and rarely exceeded 10 lbs. or 15 lbs. a quarter. It is true, breed has much to do with this question; but in sheep of the same breed, kept in different ways, a difference of twenty-five per cent. may be frequently observed. To insure a healthy offspring, a good fleece of wool, and of sound staple, sheep require to be kept well, in the spring months particularly.

Pigs.—Pigs ought never to lose the fat or condition they receive from the mother, which is easily kept up by milk, peas or beans, and all of which contain flesh. A small quantity of oil-cake, once or twice a day, in addition to turnips, mangel-wurtzel, or any vegetable food; fed in this way, many months are saved in time, and you have the advantage of summer feeding, which, on account of the warmth, is by far the best period for this purpose.

Horses.—I need only say that where great muscular development is required, as in the case of race horses which run for the two-year-old stakes, they are corned very high as soon as they can eat it; and it is astonishing to see the strength and activity resulting from such a plan. Early maturity is very profitable here. Give your yearlings plenty of oats and beans, with steamed potatoes during the winter, and you gain a complete year in time, besides the increased value you put upon the animal; and in summer feed them upon rye or clover, the best possible food for horses. The sooner they are broken in the better; their tempers become quieter, and they thrive more. I wish to mention here the great value of salt to all young animals; it destroys bots and worms, it promotes digestion, and assists the secretion of healthy bile, the medium through which respiration is supported; this, however, should be given in moderate quantities.

Having now spoken upon the general management of the various kinds of cattle usually reared by the farmer, I shall conclude with a few remarks upon their food; and I deem you will not consider this out of place. The amount of food, either for man or beast, which a given acre will produce, depends considerably upon the kind of crops which is raised. Thus, a crop of 30 bushels of wheat will yield only about 1,400 lbs. of fine flour, while a crop of

six tons of potatoes will give about 4,400 lbs. of an agreeable, dry, and mealy food.

It is said, on the authority of the Board of Agriculture, that a crop of clover, tares, rape, or potatoes, cabbage, or turnips, will furnish at least three times as much food for cattle as an equal breadth of pasture-grass of medium quality. This, however, being but a hint, I will at once give you a table of the nutritive qualities of the various sorts of food now in common use. It is selected with some care from the various tables published, and has direct reference to the subject before us, on account of the proportions of gluten, starch, and oil which each article contains.

In the root crops I place—first, carrots; second, mangel-wurtzel; third, swedes; fourth, potatoes; fifth, cabbage; sixth, common turnips.

In the green crops—first, dills; second, rye; third, clover; and fourth, grass.

In the corn crops—first, beans; second, peas; third, lintels; fourth, wheat; fifth, barley and Indian corn; sixth, oats; seventh, rye; eighth, buckwheat.

In the straw crops—first, pea straw, which is nearly equal to hay; second, oat and barley straw; fourth, wheat straw; fifth, rye straw; and sixth, bean straw.

Three pounds of oil-cake are equal to about ten pounds of hay.

THE MORALS OF BRITISH FREE TRADE.

“A good deal of strong feeling has been excited by the arrival of instructions from the British Government with regard to the course to be pursued by the Consul, in his dealings with British vessels which are accused of smuggling, in defiance of the treaty with the Chinese. From the statements of the *Mail*, it appears that smuggling is carried on by British traders to an extent which ‘not only reflects disgrace upon British merchants generally, but inflicts injury on the honorable trader;’ and that, instead of adopting means to prevent the practices, the Government has removed the slight obstructions that have hitherto existed. This has been done, the *Mail** remarks, with a full knowledge ‘that the Chinese authorities would not, if they could and durst, enforce the law against British subjects, who are encouraged to proceed to greater infringements on the rights of the imperial government.’”

The journal from which we derive these statements is owned and edited by a subject of Her Britannic Majesty, and we lay them before our readers with a view to call their attention to the fact that the British system, called free trade, is every where maintained by aid of the total demoralization of those concerned in it. But recently, the towns and cities of China were battered down, its women outraged and its men destroyed, for the purpose of securing the power to *smuggle* the opium of which the East India Company enjoys a *monopoly* against its own unhappy subjects; and this is what is known in the Manchester system of political economy by the name of free trade!

Having thus asserted the right to perfect freedom in the work of poisoning the people of India, the next process was that of securing a *smuggling station* like Hong-kong, from which, as is seen in the above extract, merchandise of all descriptions could be carried into China free of duty, and to maintain at that port a force sufficient to compel the Chinese Government to submit to the perpetual infraction of its laws; and all this is done in the name of British free trade!

For more than a century has Gibraltar been maintained as a *smuggling station*, having for its object the prevention of any thing like association be-

* *Chinese Mail*, published at Hong-kong.

tween Spanish producers and consumers, and to that, more than to any other cause, are to be attributed the demoralization and weakness of Spain.

It is usual among Englishmen to talk of British magnanimity, and perhaps the fairest specimen of it that could be produced would be the one described in the extract above given. The Chinese Government is weak, and therefore the British Government has now "removed the slight obstructions" to smuggling that had previously existed, and it has done this under the belief that the former "durst not enforce the law against British subjects."

The largest contributors in the world towards the maintenance of British fleets and armies are the farmers and planters of America, and without their aid the British Government could no longer trample upon the rights of the people of Ireland and India, of Spain, Portugal and China. How long will they be content to impoverish themselves for the maintenance of a system so destructive of the rights and of the happiness of the rest of mankind?

From the Journal of Agriculture.

MEMOIR OF JOHN S. SKINNER.

A TRIBUTE of respect to the oldest laborer in the field of agricultural literature, from the youngest! It is meet and proper that we who are just entering on the path trodden for more than thirty years by the way-worn and weary veteran who now rests from his labors,—that we, who walk in his footsteps and profit by his pioneer labors, should carve one line upon his tombstone in grateful acknowledgment of our obligation.

What though the noble heart, that ever throbbed with quicker pulsation at the voice of kindness, is stilled? What if the eye, that would have beamed through the gathering tear-drops at a tone of sympathy, has been closed by the icy hand of death? What though the tongue, else eloquent of thanks, is chained and still? What matters this, or all these, to our debt—our debt to the dead?

No marble monument, erected by those whom he faithfully served for thirty years, may mark the spot where his remains repose; no gathering of thousands and public eulogy may express to the world the estimation in which he was held; but will those, in whose cause he spent the strong years of his life—the farmers of America—will they reap the fruit of his labors, and decline to pay him his hire? His was the first voice that was heard claiming for agriculture its rights as a science. His light gleamed alone, but brightly and steadily, amid the dark mists of ignorance and prejudice; and even now—now when the land is illuminated by a thousand—that same torch, in other hands, is burning and blazing with a pure and brilliant flame. Over thirty years ago, our buried brother established the old *American Farmer*, at Baltimore, the first periodical in America which devoted its columns to agricultural intelligence and information, the ancestor of all those now living. Is the voice of the agricultural press gone, that no one has heard a whisper from them for any testimonial of respect to the oldest agricultural editor in America! True, he has gone beyond our reach and beyond our sympathy; his Father alone can reward him for the "deeds done in the body;" but the partner who shared his sorrows and his toils remains with us, with a scanty pittance saved from the wreck for her support. Can we not pay to her what we owe to him?

Let the farmers' voice be heard. What say they? Will any second our

motion, that, throughout the land, we should in some palpable manner, and in concert with one another, express our respect for the departed by succoring the surviving? Will any one propose a plan?

We subjoin a sketch of Mr. Skinner's life, prepared, at our request, by one who knew him well and loved him. It is a brief recital of services rendered, without any attempt at eulogy, and without dwelling, as friends might, upon the lovely traits of character which caused Mr. Skinner to be loved and respected throughout the Union.—EDITOR.

JOHN STUART SKINNER was born on the 22d day of February, 1788. He was a lineal descendant of Robert Skinner, who emigrated from England early in the seventeenth century, and became a large landed proprietor on that portion of the peninsula between the waters of the Chesapeake Bay and the Pawtuxent river, now Calvert county, in the State of Maryland, where he died in the year 1786. (Vide note to General Wilkinson's memoirs.)

The great-grandson of Robert Skinner, (Frederick Skinner,) the father of J. S. Skinner, was one of the most respected and popular men in the county, which even then contained an intelligent and refined society. He departed this life 2d December, 1809. From father to son, down to the subject of the present notice, they have all been tobacco planters, and the original homestead is still in possession of a member of the family, Mr. Levin Skinner, a nephew of the late John S. Skinner.

John S. Skinner received his early education at the country schools in the neighborhood of his father's house; thence he went to Charlotte Hall, St. Mary's county, Maryland, long noted as the best school in the Middle States. At the age of eighteen, Mr. S. went to Annapolis, the seat of Government of the State, and studied law with the late Chancellor Johnson, the father of the Hon. Reverdy Johnson. Before he was of age, he was appointed notary public by Governor Wright, who overcame the objections made by some members of the Council to Mr. Skinner's appointment on the score of his youth. He was three or four years elected reading clerk to the Legislature. His studies finished, he was admitted to the bar, and at twenty-one commenced the practice of the law. On the 10th of March, 1812, Mr. Skinner was married to Elizabeth G. Davies, of Baltimore, by whom he had three sons, one of whom only survives his father. His second son died in Louisiana in 1847, leaving a wife and two children. During the last war with England, Mr. S. was appointed, by Mr. Madison, Government agent to negotiate with the British forces in Chesapeake Bay. His associations with the superior officers of the fleet were not confined to mere official courtesies, but ripened into friendship; and at intervals more or less distant, up to the time of the decease of Admirals Cockburn and Barry, the most friendly letters were exchanged between them. Other friends were also made on board the British fleet.

In the fall of 1813, Mr. Skinner moved to Baltimore; and when the flotilla was launched, he was appointed purser. He was afterward appointed postmaster of Baltimore by Mr. Madison, which place he held for twenty-two years, and until removed during the administration of Mr. Van Buren. Mr. S. was a great favorite with Presidents Madison and Monroe, having refused from the former a judgeship in the West, and the post of Secretary of State in Arkansas. At the approach of the British forces upon Washington, Mr. S. rode ninety miles in the night, and first announced to the Government their march, after having warned the public authorities a week prior to their setting out.

Mr. Skinner was an ardent admirer and lover of all sorts of rural employments and internal improvements. His whole heart was wrapped up in the improvement of his country, its agricultural interests in particular. Thinking his native State behind those of the North and East in its agricultural progress, he determined to use all his energies and talents to arouse his fellow-citizens to emulate their neighbors; and established the very first agricultural paper that was ever issued in the United States, almost exclusively devoted to the farmers' interest, the old *American Farmer*. The first number appeared on the 2d of April, 1819, without one single subscriber. It proved in the sequel to be one of the most useful, and probably the most profitable journal of the kind ever published in the country. The subscription was \$4 a year. He carried it on for several years, and afterwards sold it for \$20,000. No pains were spared to make the *Farmer* worthy of the cause, and many essays from the best writers in the country appeared in its columns. Even now it is considered a text-book by many of our farmers. He was the first to propose and get up the agricultural shows in the Middle and

Southern States. Now they have fairs in almost every county, and it is admitted by all they are of great utility.

To the *American Farmer* succeeded the *Turf Register*, which was also sold for a good price.

On the election of General Harrison, Mr. Skinner was appointed Third Assistant Postmaster-General. In this important post he saved to the Government, as the records will show, \$200,000, by curtailment of expenditure in his bureau, and yet was popular with the mail contractors. Mr. S. was removed from this post by Mr. Cave Johnson, Postmaster-General under Mr. Polk. Mr. Skinner's unremitting industry and close confinement, while in the General Post Office, dreadfully impaired his health, and brought on a giddiness of the head, which caused him very suddenly to lose his hearing. This was not only a dreadful privation to himself, but a very great loss to his friends and acquaintances, for there were few more blessed with conversational abilities than he. He then became editor of the *Farmers' Library and Agricultural Journal*, for Messrs. Greeley and McElrath; but this work was too costly, and possibly of too elevated a character, to become popular, and it was discontinued. Then, by the advice of his friend, Mr. HENRY C. CAREY, and by his assistance and that of his Eastern friends, he started *THE PLOUGH, THE LOOM, AND THE ANVIL*, a journal which, up to this time, has been gaining rapidly in public estimation.

Mr. Skinner was the intimate and confidential friend of the good LAFAYETTE, and corresponded with him for years before they met. This was owing to the fact of Mr. Skinner being the nephew and namesake of General Lafayette's bosom friend and companion in arms, Col. Jack Stuart. Mr. S. transacted all Lafayette's business in this country, both for father and son; and after the death of both, continued to do so for the heirs, until the melancholy accident which caused his own death. Mr. S. for many years maintained an extensive correspondence with distinguished men, both at home and abroad, and at the time of his death was a member of many of the foreign agricultural societies. He also received a vote of thanks from the Chilian Congress, for his services rendered in their struggle for independence. Mr. Skinner had talents of the highest order; and had he devoted himself to his profession, the law, he must have risen to great eminence; but he was drawn from it by his great love of agricultural pursuits. To cultivate and improve the soil, and to raise the character of the farmer, was the great object of all his labors. In private life, as a *husband*, a *father*, and a *master*, he was devoted, affectionate, kind, and too indulgent. He was hospitable to a fault, generous, unsuspicious, and confiding. In money matters, he was as simple as a child. He was charitable as the day, and it might with truth be said of him, "His left hand knew not what his right hand did." Good, noble-hearted man, take him all in all, it will be long before we look on his like again.

THE NEW TEST OF A NATION'S PROSPERITY.

"The system termed free trade meant cheapness and competition. They were identical, and this meeting was assembled to consider the effects produced upon their interests by the application of the principle of unrestricted competition, termed free trade. Cheapness was held up to the working classes as the one thing needful; and so that cheapness was but secured, men ran away with the idea that they had gained the one thing needful, and that thus their prosperity and welfare were secured and established for ever. But what was the fact? This cheapness meant nothing else than cheapness of labor. *What signified to the working man the money price he had to pay for the articles he required, except in reference to the money price which he himself received for that which was his only capital, his bones, his sinews, and muscles, his powers of body and of mind?* (Loud cheers.) It was all very well for Mr. Cobden to assert, as he had once asserted, that emigration was a result of the operation of the corn laws, and that if the food were brought to the people, they would not have to drive the people to the food. 'Give us but cheap bread,' said he, 'and you will find two masters running after one working man; no working man will be in want of employment, and no working man will fail to obtain high wages for that employment, which will then be seeking him in prodigal redundancy.' But was that the case? Had that end been attained up to the present moment? (Cries of 'No.') As far as his observation and his information went, (and it was most extensive,) it was not the case throughout the country; it was not so even in the manufacturing districts; it was not here in London; and the prosperity which was vaunted and echoed, and re-echoed, by the free-trade journals day after day had no existence, in his judgment, except in the columns of those journals, and in the minds of those persons who yielded themselves unresistingly to the dogmas which were put forth to cheat and gull them to their own

destruction. (Loud cheers.) He had said that cheapness meant cheapness of labor. And why? Let them consider soberly and quietly what were the elements of which the value of every material was composed. Those elements were the raw material and the labor that fashioned that raw material for the use of man. Take cotton. What was the value of one pound of cotton? Fivepence, perhaps. Every pound of cotton was spun into five yards of cotton cloth upon the average. And what was the value of a yard of cotton cloth on the average? Perhaps fivepence. But the cotton that entered into the composition of a yard of cotton cloth being worth one penny, what gave it the additional value of fourpence when manufactured into cotton? Chiefly labor. (Hear, hear.) In fact, the larger proportion of the elements which constituted the value of every product was labor. Was it not to seek after a phantom, then, to go in search of cheapness? If labor were not cheapened, they could not obtain that cheapness in any article of produce. So he said that cheap labor must inevitably follow the cheapness of the means of subsistence. (Cheers.) And if there was a smaller supply of labor in a country than was required, it mattered not what might be the price of the means of subsistence; the law of supply and demand would always settle the price of labor. That was the case with the United States of America, for instance, where, in consequence of the limited supply of labor, wages were high and food cheap. But here in England we had a redundant population, and, as a result, competition in labor, the worst and the bitterest of the enemies of the working man. *Laborer bid against laborer, and down went the wages until they reached that lowest level, what a man could subsist upon.* (Hear, hear.) That was more than a theory; it was a fact. It was a practical question, and no individuals could better judge of it than the persons who were then present. (Cheers.) Why were skilled artisans' wages not beaten down in the same way? Simply because they combined together, and would not be beaten down. They would not consent to allow themselves to be put in competition one against the other, and they were right. (Loud cheers.) Now, that competition which was held up as the greatest possible boon was the subject of the strangest conceivable confusion of ideas. It was perfectly right that they should compete for the purpose of ascertaining who could produce the best article; it was perfectly right that they should compete for the purpose of stimulating the intellect. But what was the competition of free-traders? It was a base, sordid, demoralizing competition—a competition for mere cheapness; so that *the man who would allow himself to be the most degraded in the social, physical, moral and political scale, was the very individual who would win the race in that struggle.* (Cheers.) He denounced that competition; it was an unholy and a mischievous one, and the working classes in particular ought to set their faces against it. What did free trade do for them? It told them that they should not only be set against one another at home, but that in the foreign trade they should have to compete with the serfs of Russia and of Poland, who lived on horse beans, and who did not know what was meant by the comforts of a home. (Hear, hear.) Under that system, the man who was content with the lowest description of food and other necessities of life, was the one who could produce at the cheapest rate, and who would inevitably be the most successful. Was that beneficial competition? Was it a competition to which Englishmen ought to be exposed? (Cries of 'No.') They should look deeper than the surface in considering the question; and they should not allow themselves to be deluded by the paltry artifice of exhibiting a large loaf and a small loaf as the emblems of free trade and protection. *It was not the cheapness of an article, but the facility with which a people could obtain the means of purchasing it, that was the test of a nation's prosperity.* He would read a few passages from a work of an able American writer, Mr. H. C. Carey, for the purpose of showing the opinion which so competent a judge entertained of the free-trade system of this country: 'The British system is built upon cheap labor, by which is meant low-priced and worthless labor. Its effect is to cause it to become from day to day more low-priced and worthless, and thus to destroy production, upon which commerce must be based. The object of protection is to produce dear labor, that is, high-priced and valuable labor; and its effect is to cause it to increase in value from day to day, and to increase the equivalents to be exchanged, to the great increase of commerce.' 'Were Ireland this day free, she would establish protection, and thus arrest emigration. Food, and cloth, and iron, would become more abundant, and commerce would grow. Were Canada independent, she would establish protection, and then she would retain the immigrant coming from Ireland or England. Were India independent, she too would establish protection, and then the culture of cotton would be resumed on the rich lands of Bengal.' 'The British system is 'a war upon the labor and capital of the world,' upon her own as well as that of other nations. Its effect is to keep the return to the capitalist at a very low point, and often to deprive him altogether of return, and all because it tends to compel the laborer to underwork the Hindoo and the Russian, and to sink him to their level.'"

We take the above from the report of an admirable speech made by Mr.

G. F. Young, at a meeting at the Tower Hamlets, London, and now lay it before our readers with an urgent request that they will, each and all, consider it with special reference to themselves. Let them ask themselves if the test of their own prosperity consists in the cheapness of food, of clothing, or of iron, or in their own ability to obtain it. Clothing is now cheaper in money, but it is so much dearer in labor than it was four years since that the consumption, per head, has largely diminished. Iron is now cheap in money, but in labor it is so much dearer than it was four years since that the consumption, per head, has diminished at least one third. Are these things evidences of growing prosperity?

The object of the British system is that of having laborer to compete against laborer, farmer against farmer, planter against planter; to have two laborers seeking one master, two farmers seeking one consumer of food, two planters seeking one mill-owner. And the tendency of the tariff of 1846 is to enable the masters, the consumers, and the mill-owners to attain this object. Of what advantage is it to the Irish laborer that cloth is cheap, when he cannot sell the labor of "his bones, his sinews, and his muscles, his powers of body and of mind," even for sixpence a day? Of what advantage is it to the farmer of Illinois that iron is cheap, when he is compelled to sell his wheat at forty or forty-five cents a bushel? Of what advantage is it to the planter that either cloth or iron is cheap, when he finds himself compelled to sell his cotton at thirty dollars a bale? The tendency of the Manchester system is here most properly described. The farmers and planters of the Union are invited to seek degradation "in the social, physical, moral and political scale," and to exert their power in competition with their fellow agriculturists of the world, seeking to degrade them in the vain hope that they may thereby be enabled "to win the race in the struggle," the sole object of which is to increase the quantity of the raw produce passing from the producer to the consumer through the ships and mills of Britain, and thus enabling the middlemen of that country to control the manufactures and trade of the world.

It is high time that our planters and our farmers should open their eyes to the true object of the Manchester system of free trade, and understand that its tendency is to the universal degradation of man, and that IN LENDING THEIR AID TO ITS ACCOMPLISHMENT THEY ARE GUILTY OF A CRIME. To the aid they have already given, Britain has owed the power that has enabled her to ruin Ireland and India, and that is now enabling *the few* among the people of England more and more to monopolize the land once divided among *the many*, and to increase the number of men that are seeking one master; or in other words, to degrade them from the condition of freemen to that of slaves. How long they will continue thus to lend their assistance to the accomplishment of the degradation of man throughout the world, remains to be seen; but we trust the day cannot be distant when they will see that in making a market on the land for the products of "the bones, the sinews, the muscles, the powers of mind and body" of their own fellow-citizens, and thus enriching their land and themselves, they will be doing what in them lies for aiding in establishing the freedom of man throughout the world.

TO PROTECT SHEEP FROM DOGS.

THE general evil of dogs, which I see is claiming at present the most stringent legislation in our Northern States to protect the sheep, likewise exists with us. Our own Legislature has done much, and will, no doubt, do more at the proper time, to eradicate this evil. In the mean time, let me publish to the sheep-raising world a remedy against the destruction of sheep by dogs, which was given me a short time since by a highly

respectable and valued friend, himself an extensive wool-grower. It consists simply in placing on one sheep in every ten of the flock a bell of the usual size for sheep. The reasoning of my friend is this: the instinct of the dog prompts him to do all his acts in a sly, stealthy manner; his attacks upon sheep are most frequently made at night, while they are at rest, and the sudden and simultaneous jingling of all the bells strikes terror to the dogs; they turn tails and leave the sheep, fearing the noise of the bells will lead to their exposure. The ratio of bells might be made to vary according to the size of the flock.

The importance of sheep preservation from dogs, the writer hopes, will claim for this communication an insertion in most of the papers of the Union, that a remedy so cheap and simple may be fully tested.—*Richmond Whig*.

HOW THE TARIFF OF 1846 EXTENDS THE MARKET FOR THE GREAT STAPLE OF THE SOUTH.

THE import of cotton into Cincinnati—

Of the crop of 1846, was	-	-	-	-	-	12,528 bales.
“ “ 1847,	-	-	-	-	-	13,476 “
“ “ 1848,	-	-	-	-	-	9,058 “
“ “ 1849,	-	-	-	-	-	8,551 “
“ “ 1850,	-	-	-	-	-	7,168 “

In North Carolina, during the last year, the mills reduced their operatives one half, two thirds, and even, as we understand, three fourths. One mill was burnt, and none have been built; and such has been, to a great extent, the course of operation every where south and west of Pennsylvania. The road from Baltimore to Washington abounds in deserted cotton mills, and yet, diminished as is our production of cotton cloth, our power to consume it diminishes yet more rapidly, as will be seen by the following facts.

The export of domestic cottons for the last fiscal year exceeded, as was shown in our last, by about one third, that of the previous year. We have now before us the export *from Boston alone*, of the three months of July, August, and September, and they amount to - - - \$854,000

While the total exports from January to the close of September have been - - - - -

ber have been	-	-	-	-	-	-	1,956,817
Against, in the same period last year,	-	-	-	-	-	-	1,147,094
And in 1850,	-	-	-	-	-	-	1,228,446

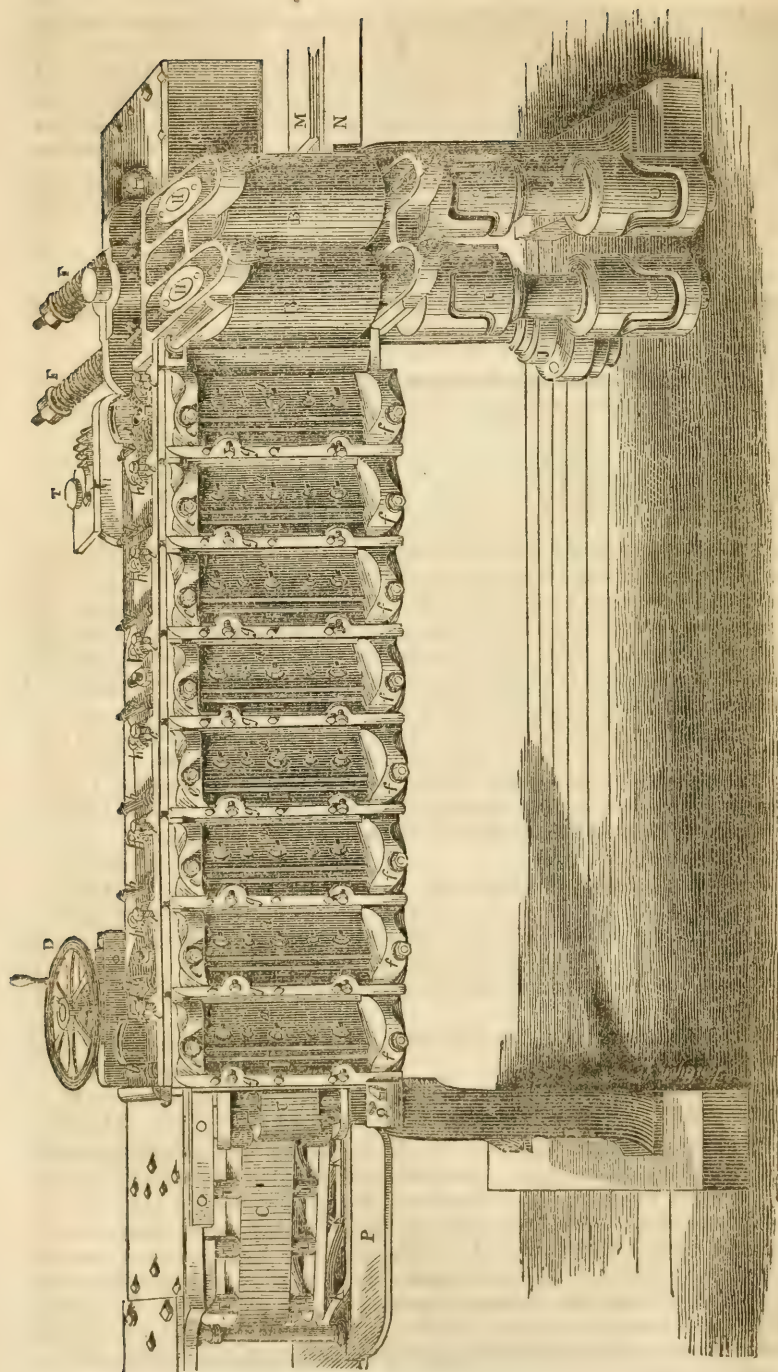
We have here an increase of no less than seventy per cent. as compared with 1850, and of fifty per cent. as compared with 1849, when we spun and wove *one hundred and sixty-four thousand bales* more than we have done in the last twelve months.

The exports from New-York show similar results, those of the present year having been, bales and cases, - - - - - 32,865

Against, in the last year, - - - - - 28,484

And in 1849, - - - - - 21,370

The less cotton we spin, the less is our ability to consume the little cloth we make, the greater is our necessity for seeking abroad for a market for cloth, the greater is the competition in the world for the sale of cloth and of cotton, and the greater is the diminution in the price of cotton, as every intelligent planter must see. The way to raise the price of cotton is to increase the market, as was done under the tariff of 1842; and the way to depress it is to diminish the market, as is now being done under the tariff of 1846. It is time the planters should awake to the fact that they are now destroying the only market that grows the faster as they are better paid.



BEARDSLEES ELASTIC CUTTER, FOR PLANING BOARDS AND PLANK — SEE NEXT PAGE.

BEARDSLEE'S ELASTIC CUTTER, FOR PLANING BOARDS AND PLANK.

A NEW Planing Machine was patented on the 20th of May last, by George W. Beardslee, of the city of Albany, N. Y., of which the opposite engraving is an illustration. It presents a view of the machine in perspective, upon the mill floor, and shows the outline of the structure, as it stands. It planes boards and plank with a series of line cutters, which are so attached and adjusted to side plates, that the heels of the stock hold together the grains of the board, and prevent the material from being forced asunder by the feeding power; the heel of the stock being elastic, while the edge of the knife retains its relative graduation.

The stocks are made elastic by being bolted at the ends to hinged bars; these bars are attached by pins to bolts, which are worked in sockets formed in the side plates, to which all the stocks are adjusted. The vibrating centre of the stock hinge is in line with the cutting edge of the knife. By this arrangement, the heel of each stock is allowed to rise and fall without changing the relative graduation of the series of line cutters. This device, as will readily be seen, is a very great improvement, and is all-important in the practical operation of line cutters.

By means of the peculiar arrangement of this machine, the sole of the stock always rests upon the board in the precise plane of the preceding cut, and from that plane there can be no deviation, whether the board be narrow or wide, or in whatever part of the machine it may run. The elasticity of the stock is the same, whether it is controlled by springs at both ends, or by a spring at one end only. By this arrangement, also, a diffused and uniform pressure is produced along the whole line of elastic stocks. The soles of the stocks are broad, and allow the lumber to pass beneath them without depressing the surface.

The peculiar arrangement of the knives and stocks effectually obviates all the difficulties heretofore encountered in the use of line planers. As there is no intervening space between the sole of the stock and the board, defective and cross-grained boards cannot separate while passing through the machine; loose and detached portions of the board are held in position or pass out during the process of planing by the yielding of the elastic stocks. The graduation of the shaving and the thickness of the lumber are not changed by the removal of the cutters to be sharpened, as the most ordinary mechanic can readily replace the knives in the precise position which they occupied before their removal; this insures uniform thickness of the material planed.

The first knife of the series is made elastic both at the heel and the edge, with a fixed throat like the hand-plane. It is held in its relative position, and prevented from moving forward or backward, by the hinge-pin working in a slot. This cutter, in its operation, becomes a jacker, taking the first shaving from every board, and a shaving of equal thickness, whether the board be thick or thin; thus the whole gritty surface of the board is removed with the first shaving, which, from the vertical position of the machine, passes out before the board is brought in contact with the other knives, and they are left to operate only upon a surface previously planed.

The belts, gearing and pulleys which operate the feeding apparatus, are all placed beneath the floor of the mill, and from their position are less liable to be deranged. The gears are of great strength, capable of passing any material through the machine. The principal driving-wheel weighs 676 lbs.; and the rollers are operated by three gear-wheels, which are of great strength and equal size.

The rollers and the sectional plates form a clamping apparatus, which con-

veys the boards or plank through the machine while subjected to the action of the knives. This apparatus is peculiar in its structure and movement. There is an endless sectional platform, which is carried forward by pinions working in racks. Thus the successive plates are propelled beneath the series of cutters, rising and descending at each end in concentric grooves, and returning along the back of the machine. The sectional plates pass over a true lubricated bed, and, being made of iron and planed to a uniform thickness, they form a perfect plane while passing beneath the cutters. This device is of great practical importance in connection with the use of line planers, as any variation of the bed upon which the lumber rests not only produces an unequal thickness, but also effectually destroys the action of the cap. The cap, when placed in the relative position to the edge of the knife which is required for a given shaving, serves the twofold purpose of holding the board to the bed, and preventing the grains of the wood from separating in advance of the cutting edge of the knife. If the bed be unequal, the shaving will be unequal also. The cap must be removed from the cutting edge a sufficient distance to allow the greatest thickness of the shaving to be removed, and of necessity ceases to operate at all as the thickness of the shaving diminishes. But with the level bed of the Beardslee Machine, the thickness of the shaving is uniform, and the action of the cap is steady, equal, and unvarying. The machine is constructed entirely of metal, and in the most substantial, durable manner; it is less liable to derangement and injury than any other planing machine in use; it requires but a small proportion of the power which is requisite in the Woodworth machine to do an equal amount of work. The cutters perform more than ten times the service without requiring to be sharpened. The machine planes lumber of every kind, and planes it equally well, whether it be one fourth of an inch or three inches in thickness; it produces a beauty of surface and a uniformity of thickness never before equalled by any machine in this country. The quantity which it will plane in a given time is almost incredible, as its only limit is the quantity which can be fed into the machine.

The newly invented Matcher, for tongueing and grooving boards and plank, which is used in connection with this machine, is a device exceedingly simple and beautiful in its operation. It has never, it is said, before been equalled by any tongueing and grooving machine, either as to the quantity or quality of its work. It produces a tongue and groove far superior to any thing that can be made with the hand match-planes by the most experienced workman. It is so arranged that it is either operated separately or in connection with the surfacing machine, and lumber is run through both the surfacing and matching machines without any more preparation than is required for other machines. In one operation, the lumber can be planed on both sides in this machine, and at the same time rabbeted and beaded or jointed.

In the accompanying engraving, *A A* are the legs which support the machine; *B B* are the feeding rollers; *C C* are sectional plates that form the movable bed; *D* is the hand wheel which operates the raising screws; *E* is a box cap of the main driving shaft; *F F* are springs attached to the feed rollers; *H H* are the roller shafts; *I I* are universal joints which connect the rollers with the lower gear; *J* is the coupling which unites the main shaft with the lower gearing; *K K K* are concentric grooves which guide the plates at each end of the machine; *L L* are racks in the plates; *M N* is the feeding table; *O* is an iron shield to the plates at the feeding end; *P* is a guide at the tail end of the machine; *Q* is a lug of the main frame to attach it to the legs; *S S* are cogs that work in the racks; *a a* are the knives and caps; *b b* are springs which hold the heel of the stocks attached to the hinged bars; *c c* are set nuts

to the socket bolts, which adjust each knife and stock separately; *ee* are nuts to the bolts which fasten the stock to the hinged bars; *ff* are knife stocks; *gg* are steel bars forming throats bolted to the stocks; *hh* are nuts to adjust the socket bolts; *i* is a fixed bar to the head knife; *jj* are raised screw nuts attached to the side plates.

THE GREAT FOOD MARKET OF THE WORLD.

"WITHIN the memory of man," say the British journals, "no such crop of grain has ever been made in Britain." Believing that it may interest some of our grain-growing readers to know what, under such circumstances, are the prospects offered to them by "the great grain market of the world," to obtain which they were persuaded to sacrifice a domestic market that was then consuming of the fruits of the earth *more than now to the extent of fifty millions of dollars*, and but for the tariff of 1846 would be consuming *now more than then to the extent of a hundred millions*, we give them the following extract from one of the latest Liverpool prices current, now before us:—

"There is no Bacon here. Beef remains dull. The demand for Pork continues to be supplied by French and Hamburg, at rates with which Americans cannot compete at present. Irish buyers are looking for low-priced Hams and Shoulders.

"The business in Breadstuffs is without any appearance of reaction. Buyers of Flour can make rather better terms. Wheat cannot be called cheaper, but it is very dull. Floating cargoes of Yellow Indian Corn, from the Danube, are abundant at 24s. 6d. to 26s. 6d. per quarter, and prevent any demand for American at present quotations. White Corn is, however, wanted at full rates."

Four years since the farmers were promised a foreign market for food to the extent of hundreds of millions of dollars per annum. What are now the prospects may be seen by the following statement of the exports of Flour and Grain from the United States to Great Britain and Ireland, from the first of September to the close of October:—

	Flour, bbls.	Meal, bbls.	Wheat, bush.	Corn, bush.
New-York,.....	172,853	.....	341,566	145,913
New-Orleans,.....	1,194	.....	.....	.....
Philadelphia,.....	10,731	1,680	28,500	1,332
Baltimore,.....	14,708	.....	14,493	.....
Boston,.....	8,440	.....	.....	.....
Other ports,.....	.....	.....	.....	9,300
Total,.....	207,926	1,680	384,559	156,445
About same time last year,.....	365,044	1,066	348,003	90,764

We are assured that we now have three hundred millions of bushels of food for which we need a market, and for the purpose of increasing that surplus we are driving our whole population into the production of food, when hundreds of thousands of them would prefer to remain consumers of food. Is it then to be wondered at that Western spring wheat now sells in New-York at sixty cents a bushel? Certainly not. A continuance of the same policy will see it reduced far lower yet, or we greatly err.

The present prices at Chicago for wheat and flour are thus given:

Wheat, *forty-five cents* a bushel!

Flour, \$2 50 to \$3 a barrel.

How this is operating upon the farmers may be seen by the following ex-

tract from the *Chicago Democrat*, a journal that, from its title, would seem to be good authority for the working of *British* free trade:—

"PRESSURE AT CHICAGO.—We find that our moneyed institutions are curtailing their loans, and, to meet this, we find all our business men making out and sending around their bills. A great deal of real estate has been purchased the past year, with one quarter of the purchase money paid down. There is now an anxiety to get the money for a second payment; and where persons have it not, they cannot obtain it without the greatest sacrifices, as *there is no demand for land now at the prices of the past season.*

"A great deal of money has been loaned to farmers on the strength of the present crop. *They can hardly pay the interest*, and are striving to get an extension for another year. *We never knew so many people from the country trying to borrow money as there has been the past week.*

"With the close of navigation thousands of persons are thrown out of employ, and must have the means of living through the winter. And it would be calamitous to the business of the city next spring not to have all those men ready in our city for the revival of business at the opening of navigation.

"It has been customary in times of a pecuniary panic to turn our eyes to the East for money; but there is a greater panic there than here. It occurs to us that our best reliance in a time like this is *in the procurement of a loan* by the Central Railroad Company, sufficient to enable it to commence its work. This would bring a large amount of money into our State, and consume a large amount of produce, lumber, and merchandise generally. If any thing can meet the blow of adversity that now threatens this region of country, it is the success of the Illinois Central Railroad Company in its present efforts to secure a loan.

"From the small stock of lumber in our city, compared with the increased population and business of the country, we infer that our lumbermen are somewhat alarmed at the Eastern panic, which is gradually extending its way westward. *And the low price of produce undoubtedly has some effect upon their business.* All our farmers look to their crops to procure the means of extending and repairing their buildings. *This year the farmers can hardly make their year's ordinary expenses balance, and so they have nothing to expend in lumber.*

"The old adage of 'Wheat in and lumber out' is not repeated this year."

How will it be next year? The farmers are now every where storing up their crops and borrowing money at high interest, waiting for a famine in Europe; but what will be the price of wheat, suppose the famine not to happen before the debts mature?

VOLCANIC ACTION—ITS EFFECTS ON THE ATMOSPHERE.

THE Academy of Sciences, Paris, some time since, appointed M. Lewy to make an examination of atmospheric air in New-Grenada and other parts of South America, and also in Europe; upon which he has based a very interesting account of his labors.

He has followed the accurate method of M. Regnault, of analyzing by volumes; and so minute are his investigations, as to descend into the infinitesimal quantities of the one ten-thousandth part of a degree of the eudiometer. As to France, his labors agree with those of Gay-Lussac and others; that is, in volumes of oxygen, 20.80; of nitrogen, 73.20; of carbonic acid, .004. In New-Grenada, he took the mean of eleven observations at different localities, and found that in 10,000 volumes of pure atmospheric air, he had uniformly 1201.425 of oxygen, 7894.557 of nitrogen, and 4.008 of carbonic acid. These proportions are almost identical with those observed in various parts of Europe. He remarked, however, that the air of New-Grenada presented once or twice a year a very remarkable increase in the proportion of carbonic acid, attended with an appreciable reduction of the oxygen, and causing a very sensible alteration in the constitution of the atmosphere.

M. Lewy ascribes this phenomenon to volcanic action; the frequent discharges of lava clearing the soil, burning up the forests, and setting free large quantities of the former gas. He has found ten or twelve times the usual proportion of the acid at those times, and a corresponding absence of oxygen. To the same volcanic causes, M. Lewy lays the extraordinary development of vegetation in South America. The immense volumes of carbonic gas projected into the air contribute, he thinks, largely to nourish the prodigious growth of tropical plants, which frequently furnish us the spectacle of a sizeable tree as a

representation of what in less genial latitudes is presented by a lowly bush. Carbon, it is well known, constitutes one half the composition of wood.

In examining the atmosphere at the level of the sea, M. Lewy has arrived at some curious results. In daytime he found the air contained a little more of oxygen and carbonic acid than at night. The farther he proceeded from the shore, the more marked the difference became. He attempts to account for the fact by suggesting the probable action of the solar rays, which, by warming the water during the day, determine the disengagement of a portion of the gas held in solution. Air extracted from water is known to be more highly charged with oxygen and carbonic acid than the atmosphere.

That volcanic action produces a very material change in the temperature of the atmosphere at a considerable distance from the seat of the disturbing power, has been fully testified by the numerous observations of Mr. Meriam, taken on Brooklyn Heights. M. Lewy's theory of the phenomenon, therefore, appears to us as a very plausible one.

SOME POISONS AND THEIR ANTIDOTES.

THE effect which some metals in an oxidized state have upon the human body is very singular.

Gold and silver in a pure state may be taken into the stomach without producing any injurious effect; but a single grain of white arsenic will soon curdle the life-blood, and lay low in death the stoutest of men. Many other substances, as well as arsenic, produce as fatal results.

The effect of "animal poison" upon the human frame has been known from all ages, but the reason why the tiny drop ejected from the fang of the snake, or the bite of the scorpion, produces such tremendous effects upon the whole system, is not so well known; how true it is, "man is crushed before the moth." The effect of poisons taken inwardly has also been known from the earliest ages, and a common method of putting victims to death in Greece was by the poisoned bowl. The wise Socrates fell a victim to this kind of death.

At an early age, the alchemists devoted as much time to the discovery of antidotes for poisons as they did to discover the philosopher's stone. All the knowledge derived from them, however, respecting this branch of chemical science, is of scarcely any worth whatever. Chemistry is a modern science in every respect, and in no one instance more than the investigations of such men as Christisson into the nature of poisons. The virulence of any poison is known only by experiment. Poisons are soluble; that is, they pass into the blood, and injuriously affect the functions of life. The object of the chemist to render poison inert is to make it insoluble, when it will pass away and escape without producing any deleterious effect.

To do this in the stomach, is to administer an antidote which will meet every condition of the human system.

There is an acid used in many houses for removing stains from furniture and clothes, and for cleaning brass, named "oxalic acid." It greatly resembles common salts, and has been oftentimes taken for them by mistake. If this poison is taken into the stomach, it will be rendered inert by speedily drinking down a quantity of magnesia or lime-water. Another poison is corrosive sublimate, which is also used in families for destroying bed-bugs. If this is taken by children or others by mistake, the remedy is to swallow as quick as possible the white of eggs; and if these are not convenient, some pearl-ash and dissolved glue. Of these facts, every person should be informed. These substances combine with the poison in the stomach, and form an insoluble, inert compound.

Hydrated protoxide of iron, which can be purchased at the druggists, if quickly administered, is an antidote against white arsenic; and sulphuric acid is an antidote for lead. There are many poisons, however, for which no human hand has a remedy, because their action is so rapid upon the well-springs of life. But some more ought to be said about "lead poison," as it is a very extensive harm-doer. Painters' colic is caused by drinking water impregnated with lead in mines, or by the metal being introduced into the system by inhaling lead dust. The metal is soluble when introduced into the body, and is the cause of many acute pains. Sulphuretted waters, or weak sulphuric acid and water, renders lead insoluble, and has therefore been prescribed as a remedy for this disease. But it has been found that the lead, though rendered inert by being insoluble, is still diffused through the body, ready, when some favorable condition arises, to act injuriously again. It was discovered, not long ago, that the iodide of potassium is capable of dissolving the compounds of lead, or rather of bringing it to a new condition, whereby it becomes soluble and can be washed away.

If a person be poisoned with lead, the system struggles to throw it off through his

kidneys, and it can be detected in the urine. The remedy is to give sulphuric acid in water, in strength a little sour, when the pain will disappear; but the lead remains in the system. Then give a dose of iodide of potassium, and slight pains return, but the lead will be disappearing in the secretions. By repeated small doses of sulphuric acid and water, and the iodide of potassium in small doses at some intervals afterwards, the lead is effectually driven from the system.

This iodide of potassium has the same influence in driving mercury from the system, and is one of the grandest discoveries of modern times in medical chemistry. The test for the entire removal of lead from the system is, when a pretty large dose of the iodide causes no acute pains.—*Scientific American*.

From the Soil of the South.

RENOVATING SOUTHERN LANDS.

MR. EDITOR:—I have been reading and thinking about our condition as farmers and citizens. Our country was once fresh, our lands rich, and they brought forth abundance of the luxuries and comforts of life. Labor received a good reward, and our hearts were made to rejoice, from the fact that our lands were productive. But, alas! those days of prosperity are gone; the fields that once brought large and remunerating crops, a great many of them, are reduced to sedge grass, all sacrificed with gulleys. I speak to our shame, for it is our fault; and that man is ungrateful to posterity who leaves his plantation worse than he found it. Every man should improve his lands every year. I am convinced that this can be done, and in order to which, I will give you a plan, the result of much study and some experience. First—If our lands are hilly, we must ditch them properly. Next—A rotation of crops and rest of our land are necessary; and to do this, we should have our farm divided into four fields; plant one in corn, one in cotton; sow one wheat and oats; let the other field rest. Take all fields in rotation, and our land is all rested every fourth year. Plant the first field in corn, (and plough it deep while sluggards sleep, and you will have corn to sell and corn to keep,) and when we plough our corn the last time, sow peas—the tory or the redripper is, I think, the best. Gather your corn as early as possible, turn in your stock, and eat out the field; then start a plough, and we should be governed by circumstances what sort of plough. If the ground is coated over largely with pea-vines and grass, we should apply a good turning-plough; but if the ground is clean, a square point scooter and mouldboard will answer; break the field close and deep; let it lie by, till you want to sow your wheat, (forward wheat is best for our climate;) prepare the seed by soaking it in a brine made of common salt from six to eight hours, and while wet, roll the wheat in slacked lime; you can sow it wet or let it get dry; about from three pecks to a bushel is thick enough on common land; lime is a preventive of smut, and gives the young plant a vigorous growth; the salt drives away insects. Wheat should be ploughed in deep; one inch is deep enough; and if the ground is rough, it is best to pass a rake over it. It is owing to the rough manner that we sow our wheat that we have so many failures in that crop. After the wheat is cut, turn in your stock to glean your field; and, about the 1st of July, sow and plough in about a peck of peas per acre. These are intended for manure, and about the last of September, they should be turned under with a turning-plough. This field now goes to rest for one year; but it is best to sow another crop of peas in July the same year. You rest your field, and turn the vines under, the next September; by this time, we have three or four coats of vegetable matter turned and mixed in our land. This, with the rest it has received, will prepare the land to make a good crop of cotton without any more manure. Nevertheless, we should manure every acre we plant, and to this end, we should have a ditch in our lot, constructed in such a manner as to catch all the wash. It is best to have this reservoir covered with boards. Every thing in the shape of manure should be put in this ditch early in the spring or season as possible. Start your plough or ploughs, as the case may be; run a furrow as deep as you can with a shovel-plough, and, if you think it necessary, run another in the same furrow; commence hauling from your ditch and every other place you can get any manure; place your manure in the furrow, and with a turning-plough fling a bead on it; continue so the field over.

Corn should follow cotton, and should be planted in the cotton ridge. Run a furrow under the old cotton stalks, but above the manure; plant your corn, and run one furrow on each side; when the corn starts to come up, run a board or horse-rake over it. Corn planted in this way is benefited by the manure of the previous year almost to as large an extent as if the manure was put there the same year. There are many advantages in manuring on this plan, but I have not the opportunity at this time to urge them.

Wheat should follow after corn. This plan of rotation, rest, and manuring, will have the desired effect, I think; and I recommend all the farmers at least to give the above a calm, cool, and deliberate consideration. I do not say the plan is clear of defects; it may be improved on; and I hope some one more able than myself will take it into consideration.

Come up, gentlemen, and put your shoulder to the wheel of prosperity; give one steady pull on the subject of renovating our lands; and if we should succeed in the experiment, and bring back our lands to their virgin fertility, it will be a day of rejoicing to all.

Very respectfully, yours,

Pine Mountain, Harris Co., Ga.

J. H. WILLIAMS.

PLOUGHING BY STEAM.

LORD WILLOUGHBY D'ERESBY, an opulent and practical cultivator of the Grimsthorpe estate, near Bourne, England, has recently made several most successful experiments in opening and pulverizing the soil by an engine. A writer in the *London News*, describing them, says that steam-ploughing is now no longer a problem. The field selected for the last experiment had grown a wheat crop, and was of good tillable soil. The engine was placed on a movable tram road at the end of the field. By way of testing the relative powers, the plough, a double one, with reversed shares and coulters, was drawn in one direction by horses, and contrarily by steam. The horses, four very powerful animals, had much labor to drag the implement, and that only at a slow pace; whilst the engine, of 26 horse power, hurried it back as fast as a man could fairly walk to conduct the plough. After several "bouts," a subsoil plough was attached to a guage of nine and afterwards twelve inches. This additional burden, which the horses could not possibly have drawn, evidently steadied and improved the motion, and left the work in a most satisfactory manner. Harrows were afterwards appended with an equally pleasing result. The ploughing took place across old land, which showed in some places considerable dips. Two engines placed parallel at each end of the field would, without difficulty, with only a double plough, complete four acres of land in ten hours, and, if required, subsoil it too. The relative expense of ploughing 24 acres of land is given as follows: by horse, £9 12s., by steam, £6 16s. By steam-power, the twenty-four acres would be completed in a week. It would require at least ten horses to plough it in the same period.

JUSTICE TO AN AMERICAN AUTHOR.—Perhaps the ablest of the French writers on Political Economy is M. Bastiat, and his ablest book is the *Harmonies Economiques*, on which, more than on all his other productions, his reputation has been founded. The fact that the doctrines and ideas which give value to that work were not original with Bastiat, but were borrowed without credit of Mr. Henry C. Carey, has several times been alluded to in our columns, and we are glad to observe that the claims of our distinguished countryman are now being admitted in France. In an article published in the *Journal des Economistes* for October, M. de Fontenay, the intimate friend and literary executor of Bastiat, finally admits that the latter was not himself the discoverer of the principles he so successfully employed. In an article on Rent, M. de Fontenay, after stating the demolishing argument against the famous theory of Ricardo, goes on to inform his readers that "this capital refutation of Ricardo's theory was first indicated to me by Bastiat, who, as I believe, had borrowed it from Carey. Its fundamental idea is eminently just." This confession is confirmed by the editor of the *Journal*, in a note to the same article, in which, speaking of the various attempts to refute Ricardo by writers who had not previously prepared themselves by thoroughly studying and understanding his theory, he says that "Mr. Carey is the only writer who seems to us to have regularly attacked it." It is a matter of course that the controversy relative to the authorship of the new views on the subject of rent and population, first propounded by Mr. Carey, and afterwards reannounced by Bastiat, should have called to them a degree of attention which their intrinsic importance so richly merits. They are now very widely and earnestly studied in France, and have been made the subject of discussion for the next prize medal of the politico-economical department of the French Academy. We notice these facts with satisfaction, not only because they show that justice is being rendered to our countryman, but as an evidence of the spread of sound ideas upon a subject of great practical importance.—*New-York Tribune*.

P A R T I N G W O R D S .

BY HANNAH C. PELHAM.

THE parting hand I oft have pressed,
When bidding friends farewell,
While rising sighs, but half suppressed,
Spoke more than words could tell.

Well may the lips forbear to move
In friendship's parting hour;
For words alone are vain to prove
Affection's depth and power.

I value not the sad farewell,
Nor yet the brief adieu;
One silent gaze alone can tell
What language never knew.

But give to me, in that stern hour
When friends are forced to part,
The silent tear, that speaks with power
The language of the heart!

COTTON MANUFACTURES DECREASING.

THE following is the number of bales of cotton manufactured per annum in the South:—

To September, 1849,	- - - - -	110,000 bales.
To September, 1850,	- - - - -	107,000 "
To September, 1851,	- - - - -	60,000 "
This is a deplorable result. But it has decreased in the North too:—		
For the year 1849-50,	- - - - -	487,000 bales.
For the year 1850-51,	- - - - -	404,000 "

The increase of cotton exported to foreign countries over last year, is estimated at 398,555 bales. This is not the best evidence of the prosperity of cotton manufacture in the United States.—*Alabama Paper.*

Certainly not! Nor is it either the best evidence of the prosperity of the cotton culture in the United States. The price of the whole crop is fixed by the price at Liverpool, and the latter is high or low precisely as the quantity struggling to pass to the consumers of the world through the spindles and looms of England is large or small. When it is large, the friction is immense, and then it is that the British owner of spindles and looms grows rich; but then it is that the planter is impoverished, *for he it is that pays for all the friction*, whether on the road, in the ports, on board of the ships, or in the factories. When the quantity seeking a passage through the machinery of Britain is small, the friction is small; and then it is that the owner of that machinery obtains small compensation for its use, but then it is that the planter grows rich.

The object of the tariff of 1842 was that of diminishing friction by bringing the spindles and looms to take their natural places among the cotton-fields of the South; and it was doing its work, for of the crop raised in 1848 there were there consumed no less than 110,000 bales that would otherwise have been pressed on the market of England, with great diminution of price.

The object of the tariff of 1846 is that of increasing friction by removing the spindle and the loom to a distance from the producer of cotton; and it is doing its work, for of the crop raised in 1850, the Southern consumption has fallen to 60,000 bales, while the Northern one has diminished more than 100,000, and these 160,000 are now pressing in the market of England, the effect of which is seen in the fact that prices are steadily falling, and are now (Oct. 18) in New-Orleans but seven cents per pound for middling, whereas *that same cotton would at this moment sell for twelve cents per pound had we two hundred thousand bales less for which it was required to seek a market abroad.*

Had the tariff of 1842 remained untouched, the domestic consumption of

the past year would have been little short of a million of bales, and we should have been every where building new mills preparatory to increasing the consumption to eleven hundred thousand, whereas we are now every where closing old mills preparatory to a reduction of the consumption to four hundred thousand. Under the one system we should now have for export of the present crop a million and a half of bales, the price of which would be fifty dollars per bale, giving for a crop of two and a half millions *one hundred and twenty-five millions of dollars*. Under the other we are likely to have for export 2,100,000 bales, at less than thirty dollars per bale, but which, at thirty dollars, will give for the crop *seventy-five millions of dollars*; and this difference of fifty millions of dollars is what the planter pays for the support of the British monopoly system, called free trade. Yet can he not be taught that he it is that pays for all the friction between the consumer and the producer. He knows that the more numerous the ships the lower the freights, and therefore does he desire an increase in the number of ships. He *should* know that, on the same principle, the larger the quantity of machinery for spinning and weaving cotton the smaller will be the charge for its use, and yet every step he takes tends to diminish the quantity of machinery and thus to increase the power of machine owners to tax him for its use. The object of the British system is to keep down the quantity of machinery and increase the charge; and such is the tendency of the tariff of 1846. The object of THE AMERICAN SYSTEM is to increase the supply of machinery and diminish the charge; and such was the tendency of the tariff of 1842. It is really time that the planters should study the facts for themselves, and cease to be led by demagogues whose only object is that of living at their expense, and who are ever ready to pander to prejudices if by so doing they can obtain office for themselves. For want of the disposition to examine and understand for themselves, they suffer an annual loss in freights, loss of labor, exhaustion of the soil, and diminution in the value of the land, that would not be compensated were Great Britain to give them all the merchandise she exports to all the world.

For the Plough, the Loom, and the Anvil.

MANAGEMENT OF ORCHARDS.

BY W. TAPPEN.

MANY people complain about the unproductiveness of their orchards, and their unsuccessfulness in propagating and cultivating fruit trees. Now, there must be some cause for this failure in raising and producing fruits. If the climate is favorable for the propagation of fruit trees; if the location be a good one, and if the trees are rightly managed, and the ground which they occupy be well cultivated, there is not the least obstacle in the way to prevent success in the production of fine fruit. We have ever been successful in producing nice apples, &c., and our success is more to be attributed to the following plan of managing the orchard than to any thing else that occurs to me on the subject.

We have "our" hog-pen situated at one end of the orchard, so that the swine can make their ingress or egress into or out of the orchard at all times, except a few weeks in the fall, when apples, &c., begin to fall. By letting them have free access to the orchard, we succeed in producing the choicest kind of fruit. The amount of manure which they deposit under the trees and in the orchard causes the ground to be enriched, and produces a rapid

growth of grass, which is fed down by the calves, &c. And every one who is acquainted with the nature of a hog must know that he is a great animal for practising friction or rubbing against whatever comes in his way. Through his rubbing, the bodies of the trees are kept smooth, that is, at the collars of the stems, as fruit culturists say, and thus a healthy action is apparently given to the whole plant.

We never mow our orchard, holding to the principle that grass only tends to absorb the very substance which causes fruit trees to flourish and become productive. And another thing : if orchards are converted into meadows, the ground around the trunks of the trees is almost sure to be filled with ants and other insects. When hogs and calves, &c., are allowed to run among the trees, these insects most generally disappear. We have been in the habit of letting our hogs and calves, &c., run in our orchard for years, and when other people in the vicinage have failed of getting fruit, we have most generally been successful in raising the very best kind of apples, &c. Undoubtedly, had we kept the hogs, &c., out of the orchard, and let the grass grow so high as to stifle and injure the growth of the trees, we would not have got any better fruit than many of our neighbors.

Then, to sum up, if your orchard is favorably situated, and if the climate is congenial to the growth of trees, let your hogs, calves and poultry run in your orchards, if you would be blessed with nature's finest productions. The idea, in my humble estimation, of ploughing orchards when the trees have become large, is not at all a consistent one, for ploughing and harrowing only tend, and, in fact, do destroy the lateral roots of trees, and materially injure the fibres and spongyals, which every one must know are absolutely necessary to produce a vigorous growth in plants.

GAMBLING CHARACTER OF THE MONOPOLY SYSTEM

THE object of the British system called free trade is to separate as widely as possible the consumer from the producer, and to place both entirely in the power of the middleman. The planter sends his cotton to a distance to be sold, and months elapse before he ascertains the product, and during all that time he is subject to the contingencies resulting from peace or war, large or small crops, enlargement or diminution of the currency ; whereas the Manchester manufacturer buys and sells within the week, and always at such prices as enable him to make a profit. The losses of trade are thus almost invariably thrown upon the farmer and planter. It may be said, however, that most of them sell here ; and such is, to a great extent, the case ; but, even then, the losses resulting from the changes fall, to a great extent, upon the vendor. If prices rise, the factor pockets the profits ; but if they fall, the factor breaks, and the planter is ruined.

The greater the distance between the producer and the consumer, the greater is the power of the middleman, and the more gambling is the character of the trade. If proof of this be desired, we need only refer to the present condition of trade in California, where the consumption consists almost entirely of articles brought from a great distance, and where, as a matter of course, it is found that the real gold mine is behind the counter in San Francisco, and not in the placer of the Sacramento. In illustration of this, we take the following from one of the journals of the day, believing that there are few of our planting or farming readers who will fail to find in it a description of the state of things that necessarily results from the separation of the consumer from the producer, and under which they have at all times suffered,

as now suffer the producers of commodities for the Californian market. The nearer the consumer and the producer, the larger is the value of the products of the land, and the more steady is that value; and the greater the distance, the smaller is the value, and the greater the tendency to variation:—

"There are some good indications of a revival of salutary trade. A large portion of the surplus stock has been passed through the auction-room, and prices begin to rise on some articles. If I am not much mistaken, the coming winter will witness some curious freaks of traffic. *The moment it becomes known that any commodity with which the market has been glutted is becoming scarce, that moment the demand begins, and the price flies up from nothing to extravagance.* Money will be made profusely on some articles, but the difficulty at present is to divine what those articles are."—*California Letter.*

WESTERN ILLINOIS.

THE following extract is from a letter written by a young man in Western Illinois to a friend in this city:—

"Could you look with me upon the farms of from 50 to 1000 acres, under what you would call in New-England the highest state of cultivation, and hear that three or five years ago the plough had not touched its soil, a tree had not made its appearance, but all was one vast ocean of natural turf, you too would be astonished. I wish you could spend the summer season here, and see the facility with which the farmer plants, sows, cultivates, and harvests his crops. He breaks the sod with three horses and a plough that turns a furrow of 14 or 16 inches, all ready for his grain; or, if old ground, two horses, ploughing three acres per day, no stumps or rocks interfering. Small grain is sowed with a machine, drawn by either one or two horses, which sows from ten to twenty acres per day. Ground is marked out for corn with a machine that furrows three rows at once, three boys following, dropping, and then a brush covering it up; or, in place of the latter, three ploughs, or three men with hoes, as the case may be; it is cultivated with ploughs, one man tending two, a horse attached to each. When ripe, the wagons are driven into the field, and the corn husked from the stalk, leaving the stalks for the cattle to feed upon during the winter. In this way he raises from fifty to eighty bushels of corn per acre, worth at home 25 cents, and in Pekin, our nearest market, sixteen miles from here, 30 to 40 cents, shelled and winnowed by horse-power. Wheat and grass we cut with a machine that cuts ten or fifteen acres per day. It is threshed and cleaned by horse-power, and yields twenty or thirty bushels to the acre, worth 60 or 80 cents. In this railroad or telegraphic way of farming, we realize several hundred per cent. more than the Eastern farmer from his labor and capital; for where one man cultivates ten acres there, he will cultivate fifty here with less labor; and instead of paying \$20 or \$40 per acre for land, \$10 or \$15 are the best rates here.

"The rapidity with which this country is settling up is astonishing. When Delavan was located, it was thought to be almost out of creation, being so far from the edge of the prairie, (five miles;) but now improvements are being made as far beyond us as we can see. Three years ago, there were but three prairie-breaking ploughs within ten miles; now there are over eighty. Land which at that time was sold for \$1 is worth \$5. Within a year past, more than twenty houses have been built within sight of us."

We insert the above extract of a letter, written in all the frankness and truth of friendship, to a relative of the writer, now residing in this city, partly with a view of showing the immense and constantly developing resources of our Western lands, and also to introduce into the agreeable picture some improvements and finishing touches of our own.

In the vicinity of this fertile tract, capable of producing already seventy-five or eighty bushels of corn per acre, at a mere nominal expense of cultivation, we would propose to erect mills, factories, school-houses, a church, dwellings, work-shops, smithies, stores, &c., &c. "But for what purpose?" inquires the anxious reader. "What can be the motive for such impolitic and silly measures; such a waste of time and expense in the erection of buildings that would not be needed and cannot be occupied?" But we can easily explain, and, we are

quite sure, maintain the position which we have taken. Instead of planting the entire surface of these fertile fields with corn, and thus contributing, perhaps, to an overstock of that single product in market, we would devote a portion to flax, to which the soil is admirably adapted, and will produce crops equal in quality and quantity to those in any part of the world; introduce the most approved methods of preparing it for manufacturing purposes; and we would at once find very advantageous employment for the factory. The seed obtained from the crop would at once afford business for the mill in grinding, pressing, and preparing the oil which it contains. The factories, mills, &c., would, of course, make business for smiths, machinists, millwrights, and operatives, who would occupy them; and the numerous families thus drawn together would constitute a nucleus, around which would cluster, in a very short time, an extensive and increasing population; a home market for the corn, wheat, and vegetables would be created, thus saving the expense of transportation sixteen miles to "the nearest market," that being nearly 50 per cent. of its value, and, notwithstanding, cheap enough to enable the manufacturer to produce his thread, linen or oil at a reduction in cost nearly equal to the entire transportation of the raw material to the distant commercial cities, the headquarters of trade, its storage, one or two commissions, &c., &c., together with the additional advantage of lower rates of labor, arising from the reduced expenses of living where almost the entire necessities of life may be so easily and cheaply procured. And thus a happy reciprocity would exist between the consumer and the producer, resulting in very great advantages to both; and the principle, carried out, would save to the country untold millions, which are now sent abroad to pay for the very articles that might be, with an adequate protection by Government against *foreign* "free trade," produced by ourselves.

As we have long and earnestly advocated placing the "loom" and the "anvil" beside the "plough," these views will not be new to many of our readers; and we trust the time is not far distant when the true principles of political economy will be understood and carried out both by our Government and by individuals.

THE WOOL GROWERS.

"It appears to be generally conceded that fleece wool has declined full 10 cents per pound from the highest point, and even at that price buyers are not eager. We think farmers will conclude that in June, when we advised immediate sales, we must have given wholesome counsel. We omit quotations. Fine fleeces can be bought at 38 to 40 cents; $\frac{3}{4}$ blood at 35 cents; and common at 32 $\frac{1}{2}$ cents."—*Dry Goods Reporter*.

Why is this? Is it from any increase in the quantity sent to market? It is not. The whole that has passed over the New-York canals in the present year is but

-	-	-	-	-	-	-	10,272,626 pounds.
Against, in the same months of 1850,	-	-	-	-	-	-	11,519,256 "
And in those of 1849,	-	-	-	-	-	-	11,553,611 "

In 1842, the quantity sent to market by the Pennsylvania and New-York canals was only 4,800,000 pounds, but by 1847 it had risen to 16,325,000 pounds, and the consequence of the sudden increase was, that the price fell to \$33 per hundred pounds for fleece wool. Since then the production of wool has been stationary, the whole quantity that passed over the two great canals in the last year having been only 16,400,000 pounds. This year it appears to be even less, and yet the price has fallen to little more than that of 1847, and the probability is that it will fall still lower. If the wool growers desire to understand the cause of this, we recommend them to visit a few of the

abandoned woollen mills, and there to study the fact that our import of woollens in the last fiscal year is greater by about eleven millions of dollars than it was in 1847, and that those goods were obtained at the cheap price of *bonds bearing interest*. Can they wonder that the price of wool falls, *notwithstanding the fact that its production remains stationary*, when they advocate a system under which the *power to consume diminishes faster than the power to produce*? Assuredly not. Prices have fallen with the diminished power to consume; and unless we greatly err, they are destined yet to fall far lower, and to continue low until the wool growers shall determine to make a market on the land for the products of the land.

For the Plough, the Loom, and the Anvil.

THE POTATO DISEASE.

MR. EDITOR:—I have recently noticed an article, credited to the *Plough, Loom, and Anvil*, giving the results of experiments resulting from the application of straw in planting potatoes, which it appears to me is well worthy of the attention of all cultivators.

In the progress of the potato disease, the following facts—so far as my observation has extended, and I have endeavored to make careful and correct notes in the matter—have uniformly developed themselves:

In every season of its ravages, we have first seen its effects on close or compact soils; and from these it has extended, though with diminishing effect, until it reached the highest sands, where, so far as we are able to judge, the crop has suffered least from its prevalence. Now, I have no idea that the *soil* is the primary cause of this malady, any more than it is of the cholera, or many other diseases to which the human frame is liable; yet it may be, and circumstances go to show that predisposing causes exist in it, which simple and apparently inefficient remedies may have the effect to remove; and I have often thought, when I have looked back to the days long gone by, when every spring found a fine pile of swingle tow at almost every farmer's barn doors, and remember how that swingle tow was all carefully thrown into the potato hills at planting time, and how far superior, both in size and quantity, and how fine in quality the potatoes were, dug from the parts of the field where it was applied, compared with others, that if the days of flax and swingle tow would but return, we might find a mitigation to this sad disease in its application as in olden time. But in these days of progress and refinement, we should not know where to find enough of the article to enable us to make the experiment. If any one is more fortunate, and has it at command, we wish they would try it next year, and note the result. The rationale of the matter would probably be this: it would keep the earth moist and loose around the tubers; it would also preserve an equality of temperature, (rather cool,) and a proper degree of moisture; enough in dry, and none too much in rainy weather; all of which the potato seems properly to appreciate.

The straw noted in the experiment you cited, probably effected all these objects. Hence I am fully confident that its application in the way specified will be effectual on many and probably beneficial on all soils; at least, let it have a general trial, and let the effects be reported.

Has any one ever tried planting on land recently subsoiled, and noticed the difference, if any, between those planted on such lands, and those planted on ground of a similar nature not subsoiled? If it has been done, we have seen no report; or if any, it is now out of mind. We have confidence that this or

some other method of deepening and loosening the soil will prove highly beneficial in checking the disease, inasmuch as all farmers must know that the soil, especially of clayey lands, has been growing shallow and more compact for a long time; and many such lands have become cold, stiff and inactive, just such as no crop will succeed in to profit, and wholly unfit for all root crops.

We have no confidence in the theory that bugs and worms are the causes of the disease, but firmly believe it to be atmospheric, and that its effects are accelerated or retarded by predisposing causes in the soil and manner of cultivation; and we have no doubt but the most efficient remedies will be found in something simple, as a small quantity of straw, or some improvement in the manner of tilling the land.

Yours truly,

W. BARON.

Richmond, Mass., Nov. 20, 1851.

HOW TO SAVE POULTRY MANURE.—Having learned the value of poultry manure, we suppose our readers would like to know what is the best method to save it:—First, build a poultry-house, if it be no more than a rough scaffolding of poles or slabs, laid upon crotches, forming a double pitch roof, with end boards in winter, to keep out the wind and driving storms. Under this place parallel roosts; the manure during the night, then, will all drop down in a narrow row beneath. Here place light loam about a foot deep, rather wider and longer than the roost, and give it a sprinkling of plaster of Paris an inch thick. When this is covered an inch deep with manure, give it a layer of loam four inches deep, and another sprinkling of an inch of plaster, and so continue. In the spring, mix all well together, keep it free from the rain, and use it at the rate of one pint to a hill of corn, or in a corresponding quantity for cucumbers, squashes, pumpkins, melons, peas, onions, strawberries, or any other fruit, vegetable, or grain, requiring rich, warm manure, and our word for it, you will have a large crop of a superior quality.—*The Plough*.

From the Germantown Telegraph.

DANGER OF CANDLE GREASE, MARROW, &c.—It is confidently believed that disease has been introduced into the human system by the mere application or use of common "candle grease" in cases of chapped hands or lips. Candles are often made of tallow, taken from animals that have died of some foul disease, by which it is rendered unfit for using in this way. A little marrow taken from the bone of a healthy cow or bullock, and melted in a cup, is excellent for chapped lips or hands. Making a profuse lather of Castile soap on the hands, and rubbing them gently until the lather is absorbed and nearly dried up, is good to soften the skin that inclines to be husky. M.

HINTS FOR HOUSEKEEPERS.—Ribbons of any color should be washed in cold soap suds, and not rinsed. Iron them wet, and they will be stiff and nice as new, except some kinds of pink and blue, which will fade. These may be dyed to look as well as ever. Dip the blue in a little cold blue ink and water, and the pink in carmine from a pink-saucer, according to directions, and they will be perfectly restored. Marble fire-places should not be washed with suds; it will, in time, destroy the polish. After the dust is wiped off, rub the spots with a nice oiled cloth, then rub dry with a soft rag. When you rub the knobs of your doors, use a piece of pasteboard as large as your two hands, with a small hole large enough to just encircle the knob in the centre, and a slit in the paper to let it in. This, slipped on, will keep off all soil from the paint, and is a nice way of doing it.

WASHING COMPOUND.—The recipe for making this compound is often sold for considerable sums of money. Dissolve 20 lbs. of hard soap in one gallon of ley, over a slow fire, and let it boil, stirring it frequently. Now set aside to cool, and then add one quart of spirits of turpentine and one pint of strong spirits of ammonia. When cold, cut it into bars, and wrap closely in papers, and put away for use. It is far superior to common bar soap, and will save nearly one half the labor of washing.

TO CURE A FELON.—Take one table-spoonful of red lead, and one table-spoonful of Castile soap; mix them with as much weak ley as will make it soft enough to spread like a salve, and apply it on the first appearance of the felon, and it will cure it in ten or twelve hours.

For the Plough, the Loom, and the Anvil.

THE AGRICULTURAL PROSPECTS OF MICHIGAN.

MESSRS. EDITORS:—I have received a circular from you, by which I am very glad to learn that the *Plough, the Loom, and the Anvil*, so ably and successfully edited by the late COLONEL SKINNER, is to be continued. Mr. Skinner was a devoted friend of agriculture, and to him the farmer is more or less indebted for the present advanced state of agriculture in this country. The farmers, as a class, "see through a glass darkly;" they need to have the veil of prejudice drawn from their eyes, that the light of science may be admitted.

Agriculture in Michigan may not be advancing as rapidly as in many of the older States, but I think in some respects we have the advantage over many of the Western States. Emigration to this State was almost entirely checked in 1837, in consequence of a large amount of prairie land coming into market in Wisconsin and Illinois, and the deranged state of the finances of Michigan, together with her embarrassment in making the five million loan, so called.

The facilities for making a beginning in a new country were better on a prairie than on timbered land. The prospect of immediate return was greater, and the necessities of the emigrant compelled him, as he thought, perhaps, to go where he could raise his field of corn, &c., the first season, which he could not do on the timbered lands of Michigan. The temptation was very great, when broad acres were lying before them untouched, rich in all the elements to produce the waving grain, with no obstruction in the way. They could put in the plough and go miles on a straight line, if they wished. They fancied themselves already rich, and felt thankful they had passed by the timbered country of Michigan, and found a garden to begin upon; but what has been the result? They have tried it now for several years, and the crop has been cut off mostly; and what they have raised is inferior in quality—so much so, that they are obliged to mix it with Michigan wheat to make salable flour. They have undoubtedly mistaken their own interest in depending upon their wheat crop, when they should have raised stock. The farmers of Michigan raise a large amount of wheat, and that of the best quality. The climate is favorable. She is nearly surrounded by water, and her forests afford a protection against the piercing blasts of winter. The wheat does not winter-kill. Her soil is well adapted to the wheat plant, and the farmers are greatly improving in their mode of cultivation. The system of thorough drainage and deep cultivation is being adopted with the best results. The average amount per acre is greatly increased; in some instances, over sixty bushels per acre has been raised, and forty-six, take a field together. When these results have been obtained, the old system of summer fallowing has been entirely superseded by a system of rotation of crops, with the land in clover at least one year, and a crop turned under ten to twelve inches deep. Agricultural papers have induced farmers to try the experiment, and practical experience shows the real benefit. But the farmers of Michigan have long since found that it was not wise to *depend* upon the wheat crop; for although with good management they are pretty sure of a good crop, still, the price may be so low as not to remunerate them for their labor. The raising of sheep, cattle and horses has been found to be very profitable, and become branches of husbandry of considerable importance. I have no doubt but the county of Oakland sold this season more than \$250,000 worth of wool. Wool has

sold from 40 to 46 cents per lb., which is considerably higher than any year before since they have commenced raising it. All the finest cattle are bought for an Eastern market, at greatly advanced prices from previous years. Cattle are shipped by steamboat to Dunkirk, and thence to New-York by New-York and Erie Railroad. There can be no necessity for the agricultural emigrant to go beyond Michigan for a home. He can get land here of the best quality at Government price, and find a ready market for all his surplus product, with a climate more favorable for the cultivation of wheat, and a soil equal to any State in the Union, and facilities for a market much superior to many of the Western States.

Respectfully yours,

A. C. HUBBARD.

Detroit, Oct. 27, 1851.

NEW COTTON PLANT.

THE following notice of a new cotton plant would have, as we think, much interest for our cotton-growing readers, were it not that it is likely to aggravate the evil of which they so much complain—to wit: excess of production. They are now ruined by large crops, *because they persist in maintaining a system that forbids consumption to increase*, and they pray for short crops, because they then grow rich. Under such circumstances, we can scarcely recommend the adoption of this new plant, but we shall assuredly do so whenever they determine to adopt the measures necessary for bringing the spindle and the loom to their own cotton fields, for then the complaint of over-production will cease to exist.

"A NEW COTTON PLANT.—The editor of the *New-Orleans Orleanian* has seen a boll of cotton which deserves the attention of cultivators, on account of its growth and early maturity. On the 1st of June last, a lady planted in her garden a few cotton-seeds presented to her by a gentleman; on the 25th of July, a boll was ready for picking; and, at the end of sixty days from the time of planting, the cotton had arrived at maturity; being in less than one half of the time it takes the species now raised by our planters to do so. The lady was totally unacquainted with the cultivation of the great Southern staple. The seeds were introduced by Mr. Hayams, from Yucatan, and are styled the *Alica*."

THE OX.

THE native country of the ox, reckoning from the time of the flood, was the plains of Ararat, and he was a domesticated animal when he issued from the ark. He was found wherever the sons of Noah migrated, for he was necessary to the existence of man; and even to the present day, wherever man has trodden, he is found in a domesticated or wild state. The earliest record we have of the ox is in the sacred volume. Even in the antediluvian age, soon after the expulsion from Eden, the sheep had become the servant of man; and it is not improbable that the ox was subjugated at the same time. It is recorded that Jubal, the son of Lamech, who was probably born during the lifetime of Adam, was the father of such as have cattle.

The records of profane history confirm this account of the early domestication and acknowledged value of this animal, for it was worshipped by the Egyptians and venerated among the Indians. The traditions of every Celtic nation enrol the cow among the earliest productions, and represent it as a kind of divinity.

The parent race of the ox is said to have been much larger than any of the present varieties. The Urus, in his wild state, at least, was an enormous and

fierce animal, and ancient legends have thrown around him an air of mystery. In almost every part of the Continent, and in every district of England, skulls, evidently belonging to cattle, have been found, far exceeding in bulk any now known. There is a fine specimen in the British Museum; the peculiarity of the horns will be observed, resembling smaller ones dug up in the mines of Cornwall, preserved, in some degree, in the wild cattle of Chillingham Park, and not quite lost in our native breeds of Devon and East Sussex, and those of the Welsh mountains and the Highlands. We believe that this referred more to individuals than to the breed generally, for there is no doubt that, within the last century, the size of the cattle has progressively increased in England, and kept pace with the improvement of agriculture.

We will not endeavor to follow the migrations of the ox from Western Asia, nor the change in size, and form, and value which it underwent, according to the difference of climate and of pasture, as it journeyed on toward the West, for there are no records of this on which dependence can be placed.—*Youatt and Martin on Cattle.*

P O P P Y O I L .

WE have desired to call the attention of our readers to the fact that they it is that must pay the cost of transportation, and that whatever tends to increase the distance between the consumer and the producer tends to increase that cost, and to impoverish themselves, producers of the fruits of the earth. We have also desired to show them that, by reason of not making a market on the land for the products of the land, they are constantly selling off the soil and impoverishing the land, and consequently impoverishing themselves. Further, we have desired to show them that the laborer must pay the cost of transporting his labor to the place at which it is needed, and that when that cost is greater than the value of the labor, it is wasted, as is seen to be the case in Ireland, where more labor is wasted for want of a demand for it than would pay, twenty times over, for all the cloth and iron consumed in the kingdom.

Were it possible now to ascertain the amount of loss to the farmers and planters of the Union, resulting from the absence of a market on the land for its products, it would be found that, *in each of these ways*, the loss is far greater than the value of the cloth and the iron they consume; and yet these are but a portion of the modes of loss resulting from the absence of that contraction of action which results from bringing the loom and the anvil to the side of the plough and the harrow. The man who has no market for potatoes must raise wheat, and yet he could obtain ten bushels of the one in return for little more labor than is required for one of the other; and the man who cannot sell corn or turnips or cabbages must limit himself to cotton, of which he obtains from an acre no more pounds than of turnips he could have bushels. Here is another and enormous source of loss, and yet this is but another of the almost thousand reasons why land is valueless and its owners poor where no market is made at home, and land valuable and its owners rich where such a market exists. Diversity of employment is essential to the productiveness and value of labor, and diversity of production is indispensable to the value of land and the prosperity of its owners, but the latter cannot exist without the former. Among the various suggestions for diversifying the employment of land and labor, we find in one of our exchanges the annexed in regard to the cultivation of the poppy, which will be found, as we think, highly useful when

ever our readers shall arrive at the conclusion that the land they have cleared is to be kept in heart, and not exhausted, and that the house they have built is to be kept in order for their children and their children's children, and not to be abandoned as soon as they shall have exhausted their capital by taking from the land all the soil, returning to it none of the refuse of its products :

"OIL FROM POPPIES.—In Switzerland, large fields of the poppies are cultivated, not for the purpose of making opium, but oil. From the poppy a beautiful transparent oil is made, which is extensively used in house-painting. It is almost as colorless as water, and possesses so many advantages over flax-seed oil that it may ultimately supersede that article. Where flax cannot be grown, poppies can be, in poor sandy soil. Linseed oil is becoming dearer, and the demand for paint is increasing. With white lead, poppy leaves a beautiful surface, which does not afterwards change, by the action of light, into a dirty yellow."

BUYING IN THE CHEAPEST MARKET.

THE following passage, which we take from the speech of Mr. G. F. Young, elsewhere referred to, is worthy of the consideration of our readers. It is a remarkable fact that the most strenuous advocates of *British* free trade are every where throughout this country to be found among those classes who produce nothing, but "merely consume the produce of labor." Every where the laborer asks for protection; but every where the annuitant, the receiver of interest, the officers of insurance companies, and others who live on salaries, ask for *British* free trade. If our readers desire to understand the reason of this, they may have it by reference to the *London Times*, the great advocate of the system, which tells its readers that "*cheap labor is good for those who have money to spend.*" It says nothing, however, of its effects upon those who have money to get and labor to sell, as is the case with most of our readers.

"He (Mr. Young) could quite understand that cheapness might be an exceedingly good thing to Lord John Russell and the other Cabinet ministers. It was also a very good thing to the fundholder, to the army and navy, to annuitants of all kinds, and to *every class in the state who produced nothing, but merely consumed the produce of labor.* But if we were to have the cheapest-market principle carried out, he did not see *why we should not go to the cheapest market for statesmanship.* (Loud cheers.) And if we went into the cheapest market, say for the cheapest Colonial Minister—taking quality into account as well—the cheapest Chancellor of the Exchequer, and the cheapest President of the Board of Trade, he very much doubted whether we should not be able to get quite as good an article as my Lord Grey, (hear, hear, and laughter,) as Sir Charles Wood, (cheers,) or as Mr. Labouchere, (renewed cheers,) at a very much cheaper rate than we had to pay for the services of these gentlemen. (Loud cheers and laughter.) Did they suppose that an intelligent and reflecting public would not have considerations like these brought home to their minds? Ay, and they would point a little higher than that, too! (Cheers.)"

Had the nation gone to the cheapest market for a Secretary of the Treasury, it can scarcely be doubted that it could have found a better one than Mr. Walker, at less than half the cost.

THE APPLICATION OF ANTHRACITE COAL TO IRON-MAKING.

THE *London Mining Journal* contains many communications of great value relative to the adaptation of the Welsh and American anthracites to the manufacture of iron. Various other scientific works devoted to metallurgy and the useful arts have referred to the same improvement. Among others, it has formed the subject of an elaborate treatise published in Paris by M. Michael Chevalier, in 1840. In Pennsylvania, the process of iron-making with anthracite coal has become quite common, and the difficulties that for years seemed

almost insurmountable, now appear to have been entirely overcome. The anthracite iron of South Wales sustains a very high reputation in Great Britain. Mr. Mushet, a distinguished manufacturer of England, gives a decidedly favorable testimony in regard to cold-blast anthracite pig-iron. After having concluded a series of most elaborate experiments, he remarks: "It is hence abundantly evident that the pig-iron now making, with cold-blast and anthracite, at the Ystalyfera iron-works, exceeds greatly in strength, in defective powers, and capacity to resist impact, any iron at this time manufactured in the United Kingdom."

The anthracite district of South Wales is rapidly rising into importance in the production of iron. In 1847, there were no less than nine establishments, possessing thirty-two furnaces, in Swansea valley. Ten years previously, there was only *one* in operation. In September, 1847, *twenty-three* of these furnaces were in blast, making 1,150 tons of iron per week, or 59,800 tons per annum.

Let our iron manufacturers be properly encouraged by Government, and in this country the immense advantages possessed by Pennsylvania, New-Jersey and some other States will be improved, and their abundant resources in mineral wealth will be a rich treasure to the nation.

For the Plough, the Loom, and the Anvil.

BATHING-ROOMS ATTACHED TO DWELLINGS.

WHEN we consider that there are more than "three hundred thousand millions of pores in the glands of the skin which covers the body of a middle-sized man," and when we take into contemplation that more than one half we consume passes off through the pores of the skin, we ought to realize the vital importance of keeping the surface of our bodies freed from foul and noxious matter. No one can enjoy as good health with the pores of his skin clogged up, as he could were he to practise bathing prudently and agreeably to the laws of discretion. When the evacuation of the juices of the body is impeded, and when the surface of the skin becomes dry, greasy and dirty, if these things are not attended to, and if the effete matter is not removed from the surface of the body, fever must inevitably set in, however slight. By removing the impurities of the skin, and by using cold or tepid baths, as the case may require, a healthy action is produced, perspiration is promoted, and the appearance of the complexion is improved more than twofold. All the cosmetics exposed for sale on Broadway, will not give that glow to the countenance which water will impart to it when freely used in connection with some simple cleanser. In fact, water has been resorted to in almost all ages of the world, as a fluid for removing the dead matter which accumulates on the skin; and "even Homer mentions the use of the bath as an old custom."

But I did not commence this article with the intention of expatiating at large, relative to the benefits which flow from bathing. The subject which I wish to advert to is in relation to the importance of having bath-rooms connected with dwellings. The extra expense of adding bath-rooms to domiciles, is nothing in comparison to the benefit that would be derived from them if they were used as frequently as they ought to be. The greater portion of the farming community, and in fact many others who erect dwellings, do not think so far as to simply add a bathing-room to their houses, an addition as necessary as a bed-room or parlor. A bathing-room built on the plan of a bed-room, answers very well for bathing purposes. We have "our" apartment for bath-

ing arranged in such a manner, that it will answer both for a wash-room and bath-room. It is next to the kitchen, so that in the winter season, when the weather is cold, the warm air has free access to it, thus making it both comfortable and commodious. We have a mat made in the following manner to catch the water that slops out of the trough, or pail, or whatever it may be, while engaged in bathing: Take four yards of cotton cloth, or enough to make a mat five feet square; sew it together strongly, with a piece of rope about half an inch in diameter surrounding the edge, to prevent the water from running off; then paint it several times, so it will be water-proof, and you have a complete mat for bathing. When ready to bathe, you only have to place your mat nicely on the floor, and at once commence operations. When through washing, take the mat by the corners and empty the slop water into the pail, and you are done, every thing looking "bran new" and as slick as a parlor, in the room.

W. TAPPEN.

Baldwinsville, N. Y., Nov., 1851.

CALIFORNIA COWS AND POTATOES.

ONE of the best letter-writers from California is Winchester, the correspondent of the *New-York Tribune*. From his last we gather a couple of interesting items for our farmers:—

"A few days ago I sat down to dine with ten others, mostly adults. A large dish of potatoes graced the table, cut in pieces before boiling. Our landlady informed us that there were two potatoes in the dish, and no more. But there was enough and to spare. On another dish was one third of a beet. Onions often exceed a pound in weight. A cabbage at the door of a restaurant near me weighs twenty-eight pounds. These vegetables are not the result of forced culture. The soil, in many localities, can't help producing them. Very little attention is paid to tillage, and no manure is employed. I am informed that some of the gardeners in this vicinity are applying manure, but I have not seen a load of that commodity in California.

Butter is retailed at 50 to 75 cents. A very small quantity is yet produced in the country. Those who raise cows can better sell the milk at 50 cents a quart, if they live near a market. The native cows are poor milkers. They are large, masculine-looking animals, and being generally allowed to retain their calves for six months or longer, they do not willingly submit to the regulations of the dairy. It requires two or three men to milk a California cow. They set to work on horseback, and first lasso her and tumble her to the ground. They tie her head to a post, and then bind her feet together tightly in pairs. One of the men does the milking, while another holds the bucket, the terrified animal enduring the process with the same docility as a cross baby exhibits while its dirty face is scrubbed. One or two quarts of milk are the result of the operation."

COMSTOCK'S SYSTEM OF TERRA CULTURE.

WE have recently had a confidential interview with Mr. Comstock, and are fully satisfied that those who adopt his system will reap a much better crop than those who do not.

His system is founded on a law of nature, as certain and as unerring in its consequences as any other natural law; and in his lectures he directs his hearers to such an application of the principle of this discovery as is sure to

secure the desired result. This is the law in nature which he claims to have discovered; and his hearers are generally convinced of the truth of Mr. C.'s position, from having *blundered* upon its application, without knowing that they were acting upon the principle of a universal law, which is applicable to the culture of all vegetable substances. His system embraces this and other important discoveries in the vegetable kingdom.

We have seen the most flattering testimonials of those who have attended his lectures, given by gentlemen whose scientific knowledge, no less than their experience and standing in the community, forbids the idea that they would lend the influence of their names to the endorsement of any thing that did not possess substantial merit.

THE COTTON PLANTERS' CONVENTION AT MACON.

THIS Convention assembled at Macon, Ga., on the 27th of last month, and was well attended by several hundred delegates of distinguished influence and moral worth from a number of the Southern States of the Union. The results sought to be accomplished by it we have heretofore stated. They do not seem, however, to have realized the expectations that were raised, as no definite object—certainly none of very great moment—was reached by the Convention. Nevertheless, we rejoice that the Convention has been held, as it has called public attention to the importance of the subject under contemplation, and awakened an interest on behalf of cotton growing which will not slumber, until something is done that shall be satisfactory to the planters.

Meanwhile, we are forced to a repetition of the sentiments expressed in our last respecting the evils under which our friends of the South are groaning. Import the consumer, and cease to export the staple; let the cotton factory spring up in the immediate vicinity of the cotton fields; create a market for the products of the land on the land itself; and at no distant day the evils of which our Southern friends now so loudly and justly complain would disappear like mists before the sun. With plenty of manufactories, and a sound protective tariff by Government, the Southern States would soon take a position of unequalled prosperity and independence. We believe they must finally come to this point as a remedy for their evils; and believing it, we shall continue to advocate it until new light opens before us.

THE LESSONS OF THE SEASON.

To the industrious and observing farmer, every season of active vegetation conveys many an important lesson, which has a direct bearing upon his future operations. Nature deals faithfully with the farmer. Wherever he has done well, she has justly applauded and rewarded; and she has also as faithfully rebuked and punished him for his errors, his ignorance and inattention. The results of his labors for the season are now, in a great measure, manifested. The principal crops have been gathered in, and the yield and quality of them have generally been in accordance with the labor and care bestowed, provided all has been adapted to the requirements of nature. Theories have been tested; those that were founded in truth, and have been judiciously reduced to practice, have been brought to a successful issue; while those that were erroneous have resulted in failure and disappointment. It is true, however, that many theories and practices require more than one season to test them thoroughly.

The business of most farmers is in a certain degree experimental. Every

experiment which the farmer tries may be regarded as a question proposed, which nature answers in accordance with her unvarying laws. Some of these questions may be simple and oft-repeated, yet the answers are always the same. These experimental questions may take the following forms: Can we raise profitable crops, on exhausted land, with little or no manure? What is the benefit of lime, plaster, ashes, muck, and the different manures, when applied to soils for the use of the crops? These and a thousand other questions have been proposed in the various operations of the season, and the answers have been in the bountiful and the stinted harvests, in the thriving and sickly plants, and in the general success or failure that has attended the labors of the husbandman—answers various, yet reliable and instructive, when viewed aright in all their bearings and connections, and all pointing to a more wise, consistent and profitable practice in the future. What has been accomplished this year, will be accomplished again under precisely similar circumstances, of course making due allowance for the peculiarities of the season.

The success or failure which has resulted from the methods practised in the treatment of the soil and the cultivation of plants, constitutes the lessons of the season. Among our agricultural readers these lessons have been many, and some of them, we doubt not, in the case of nearly every individual, are of considerable value and of general interest. Statements of success and failure, and what has contributed to each, may be mutually interesting and profitable to our readers. The evenings are now conveniently long, and will afford opportunity for thought and investigation; and we hope many of our readers will early write out for our columns some of the lessons from their own experience, and send them to us for publication. There is material enough among them for many an interesting chapter. Who will make a beginning? So says the *Maine Farmer*; and so say we.

BEES.

IN many sections of the country the bees have stored up but little honey this season, and the late seasons are generally short of stores for winter. It is important to attend to such families before severe cold weather sets in. I do not recommend "taking up" or destroying these weak families, without honey; because we gain nothing by such a course, even admitting that they die of famine before spring, unless it be some few ounces of honey that may be in the hive. My plan is to feed them. I take a small tin pan, say eight inches long by six inches wide, and two or three inches deep, made with the sides perpendicular. I then take a thin piece of wood and make a float to fit the inside. This float I perforate with holes, as close as possible, that will not admit a bee to pass through. I use a heated iron, and burn them out, after having first made small holes with an awl. Or you may run a saw through the float to within an inch of the centre, from both ends; then shave out the interstices made by the saw, on both sides, so that the honey will pass through easily. The pan is then filled with liquid honey, or syrup made of cheap brown sugar, and the float set upon it. Place the pan in the chamber of the hive, with a pane of glass in front to admit the sun, and the bees will come up and carry the contents of the pan down, and store the honey in their combs. You can place the pan under the bees, if the hive is not filled with combs; and if filled, place a *vadit* under it, to raise it to receive the pan. In such case, you should contract the entrance to the hive so that but one or two bees can pass at a time, to prevent robbing, and see that the hive sits down tight on

all sides upon the vadir, or the floor board. A tight wooden box will answer all the purposes of a tin pan. During the warm days of November you can thus feed your bees enough to carry them through the winter. If you put the pan into the chamber of your hive, (if it has one,) you should trail the bees to the honey at first, by a few scattering drops, rapping on the side of the hive at the time, to cause them to ascend.

T. B. MINER.

Clinton, N. Y.

WINTER WHEAT IN MAINE.—With a soil so much inferior to Illinois and Wisconsin, Maine has only this advantage to compensate—a long, snowy, dreary winter. They have raised over a million of bushels in that old rocky, frozen State, this year, principally from fall-sown wheat. This has stimulated a great change among farmers. The amount sown this fall will be nearly doubled; and if the yield is as great next year as this, (from twenty to thirty bushels per acre,) Maine will nearly supply herself. The only reason to fear is, on cold and clayey soils, in an “open” winter. So there is some use in snow.—*Galena Advertiser*.

The furnaces of Maine are closed, and the people who but recently were therein employed in making iron while consuming food, now employ themselves in raising food. The mills of Maine are gradually being closed, and there exists no demand for labor to be applied to building new mills; and those who lately built mills or made cloth while consuming food, now raise food for themselves. The amount sown this year is nearly doubled, and next year Maine, as we are told, will nearly supply herself. But what will then become of the food-raisers of Illinois and Wisconsin—the men who, driven from the mills and furnaces of the East, and from the mills, the furnaces, and the mines of the Middle States, have been compelled to resort to agriculture as the only means by which they might obtain subsistence for themselves and their families? The market of Europe is closed against them, except at prices so low as to be ruinous; and what are there the prospects, may be seen by the following extract from one of the most recent reports on the grain trade of England:—

“Since the repeal of the corn laws up to the present period, the supplies have constantly been in excess of the demand, and the markets have almost always labored under great pressure. This was the case throughout the year 1850, and, with a very deficient harvest, we had low prices and superabundant supplies.”—*Mark Lane Express*, Oct. 25.

Our farmers are every where employed in converting consumers of food into producers of food, and the day is not far distant when they will pay dearly for this experiment in *British* free trade, by which is meant the subjugation of the planters and farmers of the world to the will of the Manchester political economists, the Millocracy of England.

NEW BOOKS.

An American Dictionary of the English Language. By NOAH WEBSTER, LL.D. Springfield, Mass.: Published by Charles and George Merriam.

Few men have left behind them so noble and enduring a monument as this magnificent system of the English language, as published by the Merriams in their quarto edition. The long life and profound scholarship of Dr. Webster are here embalmed and preserved to the world in a form in which they will become still more familiar to the rapidly increasing millions of our own country, as well as to all who speak the English language in every part of the globe. This volume contains the latest revisions, corrections, and additions of the author, with an introductory dissertation on the origin, history, and connection of the languages of Western Asia and Europe, with an explanation of the principles on which languages are formed, by Dr. Webster. To the work, and an invaluable portion of it, are added tables, giving the pronunciation of Greek and Latin proper names, Scripture names, and between three and four thousand geographical names, with a memoir by Professor Chauncey A. Goodrich, of Yale College.

This dictionary of the English language is not merely a complete treasury of philologi-

cal knowledge; it is a universal cyclopædia of science and art. It gives brief descriptions of every object of natural history, sufficient to enable the inquirer to understand the terms employed in its every department; and the accurate definitions of these terms are alone worth the price of the volume.

As a standard reference book, as a splendid triumph of industry, as a magnificent legacy to the world, as an enduring temple of ripened scholarship, and as a literary work which will ever be worthy of our national fame, Dr. Webster has left behind him a Dictionary that will only make his own name more illustrious and honored as new millions will win light and learning from this ample volume. No man should be without it—no man would be, were he sensible of its worth, and able to purchase it.

The Geological Observer. By Sir HENRY DE LA BECHE, C.B., F.R.S., &c. Philadelphia: Blanchard & Lea. 8vo. pp. 700. 1852.

The widely and rapidly extending interest in the yet young science of geology is evidenced by the frequent publication of valuable and costly octavos and quartos, reports and transactions, elementary treatises and manuals. We have been gratified, as well as somewhat surprised, to note the quick succession in which one volume after another has been announced during the last two or three years. We accept it as one of many tokens that there is a growing taste for the physical sciences and the study of natural history among our people; and no one is of more practical value than geology, so comprehensive and universal in its several departments. The agriculturist and the miner, the manufacturer and the merchant, with every branch of industry, may be more or less affected by the developments which this important science may make. The multiplication of able and scientific men, in every walk of life, will be an advantage, the results of which can scarcely be estimated. The value of geology to agriculturists, miners, engineers, and capitalists, is too lightly felt, but is coming to be better understood.

The volume of which we have given the title above is the production of a celebrated and most laborious and competent geological observer. Other authors, of as high a rank as Lyell, Buckland, Bakewell, Cuvier, Mantell, Murchison, and others, on the Continent, have given the world the results of their studies and their labors. The facts and principles of the science have grown to a massive system of natural truth. But the author of this volume, conscious as have been other geologists of the liability to form erroneous conclusions from many of the appearances presented in the geological field, and the retardation which the science may suffer from this cause, has produced an invaluable guide-book, by which the observer may learn the path to truth and accuracy in his investigations. The fulness of the work leaves nothing to be desired in the present condition of the science. The long experience of Sir Henry De La Beche, his scientific and general knowledge, and his ability to analyze facts and principles, have enabled him to give the geological student a masterly system of practical, working geology, which no lover of the hammer and chisel will be long without. It is such a work as is demanded by the wide class of young men who are directing their attention to this field; and we rejoice that the task of teaching the student how to become an accurate "geological observer" has fallen into hands so capable, and whose elegance and clearness as a writer have made a work of great general as well as scientific value.

The publishers have been liberal in the mechanical and artistical departments. The volume is itself an addition to the library, while the beauty of the illustrations is highly creditable to the artists. No work on geology we have ever seen is more finely embellished with letter-press engravings.

The Practical Cotton Spinner and Manufacturer: The Managers', Overlookers', and Mechanics' Companion. By R. SCOTT. Corrected and Enlarged, with Plates of American Machines. By OLIVER BYRNE. Philadelphia: Henry Carey Baird. 1 vol. 8vo. pp. 416. 1852.

Charles Scribner, publisher, Brick Church Chapel, Nassau street, has laid on our table the above work, which we cannot describe better than by quoting the remainder of the title in full:—"A comprehensive system of calculations of mill-gearing and machinery, from the primary moving power, through the different processes of carding, drawing, stubbing, roving, spinning, and weaving, with the recent improvements in machinery. To which are added, compendious tables of yarns and reeds for silk, linen, worsted, and wool." These calculations are full, and worked out in almost every instance. The speed, the amount of raw material required, the waste of material, the machinery in all its combinations, and every calculation necessary in the branches of industry named in the title, are given, and it must be a work indispensable to all interested in the loom or the mill.

The name of the editor, OLIVER BYRNE, has become too widely known to require any commendation at our hands.

The Mechanic's Assistant. By D. M. KNAPEN, A.M. New-York: D. Appleton & Co., 200 Broadway. Philadelphia: Geo. S. Appleton, 164 Chestnut street. 1 vol. 12mo, pp. 276.

In this comprehensive hand-book of the mathematics of mechanics, the practical workman has a valuable "Assistant." It is a "thorough practical treatise on mensuration and the sliding rule," and teaches "the manner of drawing all regular superficies, and the most concise methods of finding the areas of all regular superficies, and the contents of all regular solids, both by numbers and by the sliding rule." It also treats of "the laws of motion, descent of falling bodies, strength of materials, the mechanical powers, the elasticity and force of steam, specific gravities, levelling, and the pendulum," and gives, in a compact form, all the important mathematical principles required by the mechanic. Could such volumes as these be placed in the hands of our working-men, to be carefully studied, the effect would soon be made apparent in the standing and position of the laboring classes. The price of the volume is such that it is within the reach of any journeyman who has a desire to become a scientific and intelligent mechanic.

Elements of Geology. For the use of Students. By SAMUEL ST. JOHN. New-York: George P. Putnam, 155 Broadway. 1 vol. 12mo, pp. 321. 1851.

This admirable treatise on geology, by Professor St. John, who fills the chair of Chemistry and Geology in the Western Reserve College, is the latest and freshest manual for beginners which the demands of the science have called into the book-market. It is necessary, in the youthful ardor of geology, while observers are multiplying, facts are accumulating, and principles, doubtful or erroneous, are giving way before them, that the most recent and leading facts and principles should be embodied in new text-books for the students who are taking their earlier lessons in this delightful but laborious school, and who are to be the discoverers and teachers of the new generation, which shall unfold such vast stores of facts in the wide world yet unknown to the geologist. This very excellent work by Professor St. John makes no pretensions to originality of facts or principles; it is what it simply professes to be, an elementary treatise, in which the latest contributions to geology by Mantell, Murchison, Lyell, Agassiz, and our own honored Hitchcock and Dana, and State surveyors, have been carefully chiselled, and the best and most important specimens placed in this newest cabinet for the examination of students. The book is very liberally, indeed, richly illustrated with accurate engravings, and being free from the higher technicalities of the science, is a desirable and very useful teacher. It will long hold a place as a popular work.

PERIODICALS, NEWSPAPERS, &c.

The *Knickerbocker*, the oldest and one of the best of our large monthlies, is gaining in public favor daily; especially since it has reduced its terms from \$5 to \$3 per annum. Every body knows that it is published by Samuel Hueston, 139 Nassau street, New-York.

The *International Magazine*, by Stringer & Townsend, is astonishing the world with the richness and variety of its contents. The numbers are appropriately and beautifully illustrated; and though young comparatively, the *International* has attained a wide circulation. May it live a thousand years, and may its shadow never be less!

Harpers' New Monthly has become a household word amongst the reading community, and it is no disparagement of other works to say, that it richly deserves the enviable reputation which it has acquired.

The *Phrenological* and *Water-Cure Journals*, and the *Student*, by Fowlers & Wells, 131 Nassau street, are amongst the most readable, ably conducted, and cheap periodicals of the day. They are pioneers in the reform spirit of the age, and have attained a circulation, all over the Union which attests their universal popularity. For beauty of mechanical execution, they have but few equals, and no superiors. Terms, \$1 each per annum.

The *Saturday Evening Post* and *McMakin's American Courier*, both known the world over, are really fine specimens of mechanical taste and beauty, and richly stored with literary matter of a merit which would do credit to any of the monthlies. They are of the largest class, neatly printed once a week on good paper, and are offered to clubs of twenty at only \$1 per annum, if sent to one address! This must enable them to defy all competition, and to maintain the distinguished reputation they have so long held as models of American newspaper literature. Published in Philadelphia.

TOPICS OF THE PRESS.

CURING CORN-STALKS.—A correspondent of the *Maine Farmer* says: "I will tell farmers how I have managed to cure them in the best manner, with certainty, ease, and expedition, let the weather be what we term good or bad. In the first place, when I cut them I lay them on the corn, the butts highest; and then if it rains, no water will collect between the leaf and stalk. If placed in this manner, a long storm will injure them but very little. Secondly, I do not bind them until they are ready to take under cover; and then, instead of packing them away in a heap to spoil, I put them on the hay; and no barn can well be filled with hay so that there will not be room enough after the hay settles to spread all the stalks a 'down east' farmer will have. As soon as I get the stalks to the place of deposit, or on the hay where they are to remain, I cut the bands. This lets them lie loose, and they will dry perfectly. If they are dried some, they may lie a foot deep or more. If cured and cared for in this way, the cattle will eat all. They should, as a general thing, be given to cattle by way of change, as they soon set their teeth on edge, as sour apples do a person's. I have sometimes hauled them to the barn before they were much wilted, and set my barn floor full, setting them as upright as possible; always remembering to cut the bands and keep the doors open, when the weather is suitable."

NUMBER OF FARMS IN THIRTEEN STATES.—The following census statistics, showing the number of farms in the States enumerated, will be read with interest by the farming community:

New-York,	- - -	174,234
Pennsylvania,	- - -	127,733
Ohio,	- - -	146,821
Indiana,	- - -	101,973
Virginia,	- - -	76,704
Illinois,	- - -	71,062
Kentucky,	- - -	77,290
Maryland,	- - -	21,950
New-Jersey,	- - -	24,504
Delaware,	- - -	6,225
Michigan,	- - -	34,690
Wisconsin,	- - -	22,062
Iowa,	- - -	15,500

PRESERVATION OF FAT AND OILS.—An article in the *Western Lancet*, by Dr. C. W. Wright, of Cincinnati, states that the hunters of Ohio, in ancient times, had a curious way of preserving their bear's fat from becoming rancid, by melting it along with the powder or fine shreds of the bark of the slippery elm, (about a drachm of the former to a

pound of the latter,) and then straining it. The bark communicates an odor to the fat resembling that of the kernel of the hickory nut. Dr. Wright has subjected other fatty bodies, including butter and lard, to the same experiment, and in every instance, he states, with success. Butter thus prepared, he says, was, a year afterwards, as sweet and free from disagreeable odor as on the day it was made; a fact, if it really be a fact, of no mean interest to housekeepers and others.

CANNEL COAL IN VIRGINIA.—A correspondent of the *Miner's Journal* furnishes the following particulars respecting the Virginia Cannel Coal Company. They will be found interesting:—

"The capital of the Company is \$1,000,000. Their property is situated in Western Virginia, in Boone and Kanawha counties, and comprises 6,500 acres of land, held in fee simple, 5,000 of which are on Big Coal River, about 40 miles from its mouth, and the remaining 1,000 acres, which are now being worked by the Company, forms a tract some twenty miles lower down, having its principal frontage on Little Coal River, about 18 miles from its confluence with the Kanawha. Traces of cannel coal are found throughout the larger portions of Kanawha and Boone counties, varying in quantity and thickness from 6 to 50 inches.

"Coal River joins the Kanawha 48 miles from Point Pleasant, on the Ohio, which is 264 miles below Pittsburgh, and 194 miles above Cincinnati, 2,028 miles to New-Orleans, and to Cleveland on Lake Erie, via the Ohio Canal, about 400 miles. The natural outlet for the Company's cannel coal is down the Coal and Kanawha Rivers to the Ohio, thence to Cincinnati, Louisville and New-Orleans to the sea-board. The Kanawha River is generally navigable when the Ohio is, say for eight months in the year—July, August, September and October being the dry months. The Company are now at work improving the navigation of Coal River by means of locks, dams, &c., so as to render transportation by means of it independent of accidental interruptions from freshets.

"Cannel coal is now used largely in the manufacture of gas; it also has certain advantages for steam purposes. The cost of mining and sending it to New-Orleans is about 10 cents per bushel or \$3 per ton; to Cincinnati, Louisville and other points on the Ohio River, above the Falls, from 5 to 6 cents, or \$2 a ton. The market-price in these different places cannot be established till a reasonable demand is supplied. Its

price in New-Orleans for the last 20 years has ranged from \$8 to \$15 per ton. It may now be estimated at \$7 50 per ton, or 25 cents per bushel; 12 cents at Louisville, 9 cents at Cincinnati, and 7½ at Gallipolis."

SIZES OF SHOES.—The Lynn Directory for 1851 says, a size is the length of one "barley-corn," or one third of an inch. A size stick is thus formed: Take a rule or piece of pine wood thirteen inches in length, and divide it into thirty-nine equal parts, of one third of an inch each. The first thirteen are left blank, and counted nothing. The second thirteen are called children's sizes, The third thirteen are called men's and women's sizes; each marked from one to thirteen. Thus nine inches is a man's size, No. 1; ten inches is No. 4; eleven inches No. 7; twelve inches No. 10.

MEAN ANNUAL DEPTH OF RAIN FOR 4 YEARS.

(From Records of the Smithsonian Institution.)

	Inches	
Fort Constitution, N. H., -	28.85	
Watertown Arsenal, Mass., -	39.60	
Fort Hamilton, N. Y., -	45.71	
Hancock Barracks, N. Y., -	35.92	
Watrervliet Arsenal, N. Y., -	34.22	
West Point, N. Y., -	48.70	
Alleghany Arsenal, Pa., -	28.14	
Dearborn Arsenal, Mich., -	31.30	
Fort Brady, -	31.89	
" Howard, " -	38.83	
" Winnebago, " -	31.88	
" Snelling, Iowa, -	30.32	
" Crawford, Wis., -	29.54	
" Leavenworth, Mo., -	32.68	
St. Louis Arsenal, Mo., -	24.12	
Fort Smith, Ark., -	35.64	
" Gibson, " -	30.64	
" Towson, " -	46.73	
New-Orleans Barracks, La., -	51.85	
Fort Wood, La., -	47.90	
Key West, Florida, -	31.39	
Charleston, S. C., -	33.89	
Fort Monroe, Va., -	52.53	
" McHenry, Md., -	40.80	
Washington City, D. C., -	34.62	
Baltimore, (8 years,) -	39.90	
Boston, (22 years,) -	39.23	
Hanover, N. H., -	3.300	
State of New-York, -	3 060	

NEW STAPLES AT THE SOUTH.—A writer in the *Charleston Mercury* states that Mr. Bonyng has returned to that city, after a tour in Georgia, where he has met with considerable encouragement in his intentions to introduce the Tea, Indigo, Date, and Mango plants, &c., into the Southern Atlantic States. The correspondent adds: "His present wish is, to publish a work on the above staples, giving full instructions for

their cultivation and manufacture. Besides this, the book will contain a vast deal of information on subjects interesting to all classes. However, beyond the cost of the book, which is \$1, payable on delivery, the objects to which the proceeds are to be devoted are worthy of encouragement, viz.: the introduction into our State of several additional products of general consumption. Mr. Bonyng's book goes to show that Tea can be cultivated and prepared for market for three to five cents per pound. We are not prepared to state it can be, but it is very probable. Mr. Bonyng, from his long experience as a tea-planter and manufacturer, has good grounds for his statements, and will in his book advance satisfactory proof to substantiate them. Indigo, of which he treats very fully, is well worthy of a re-introduction; but our space will not allow us to enter at present more fully into the matter, but recommend to the attention of the public generally Mr. Bonyng, and wish him a hearty success."

FACTORIES IN LOUISIANA.—The editor of the *Louisiana Floridian* has lately been on a visit to Woodville, and has made an extensive examination of the manufacturing establishment at that place. He says it is now making 30,000 yards of cotton cloth per week. The factory is situated about a mile from the town, on the West Feliciana Railroad, and comprises one brick building, four stories high, which contains the whole apparatus for manufacturing. There are one engine, 80 horse power, 2 lappers and willows for preparing the cotton, 36 cotton cards, 2 drawing frames, 4 railway heads, 5 speeders, 1 batting card, 2 wool cards, 1 jack, 4,000 spindles, 2 spoolers, 2 rappers, 4 dressers, 80 looms, and all corresponding machinery calculated to do 38,000 yards per week. The whole erected and put into operation by Mr. J. D. Woodworth. The capital invested \$75,000; profits when in full operation are about 50 per cent. The profits for one week were \$472.51. The number of operatives is generally 125, at a cost of \$4.25 per week. For the operatives, there are three brick buildings, two stories high, with a basement, seventy-five feet long. Each building contains four tenements.

AGRICULTURAL CAPABILITIES OF CALIFORNIA.—A correspondent of the *Newark* (N.J.) *Advertiser* states that the present season is rapidly developing the agricultural capabilities of California soil, and the climate is unsurpassed for the cultivation of fruits. What will Atlantic farmers think of such facts as these: seven bushels of wheat raised from two quarts of seed; or, as in the experience of Major Reading's farming in large harvests, an average of ninety-two and fif-

teen sixteenths bushels of wheat from one bushel of seed; or this: 800 bushels of potatoes from an acre of ground, and sold for over \$2700? The excellence of the soil and markets are the inducements which offer themselves to the population of older countries to emigrate to California. For the improvement of the country, a population to occupy the mineral and agricultural regions, and to fill the work-shops with industry and sobriety, is all that is necessary.

A MOONLIGHT BALLOON EXCURSION.—A Paris paper of the 14th ult. gives an entertaining log-book of an aerial voyage recently performed by M. Eugene Godard and a half dozen companions, on a brilliant moonlight night. M. Godard was endeavoring to demonstrate his ability to steer the atmospheric ship as conveniently as one riding the water, and appears to have succeeded to a charm. He passed from one point of Paris and its environs to another, picking up his passengers, and stated, when he finally arose, to what points in the Department he proposed to travel, and fulfilled his promises with wonderful exactness. When passing over Clichy, at an immense height, the scene is described as one of fairy-like beauty. The moon was on the horizon; the heavens, entirely free from cloud or vapor, glittered with stars; and below, the different streets in the boulevards of Paris were distinctly protracted in long lines of light. At those *ganglia* of the city, the Place de la Concorde, the Palais Nationale, &c., the effect of the gas lamps was to produce an atmosphere dazzlingly phosphorescent, and perfectly magical in its intense coloring; and the elevated towers of Notre Dame, the columns and domes, stood out in dark relief from the glaring ground. After voyaging for some hours, the balloon descended at Garges, and the party traveled cosily and safely upon terra firma back to the city.

RICHNESS OF COPPERDOM.—The *Lake Superior Journal* of Oct. 29th, discloses some of the wonders and riches of the great Cliff Mine. The Mammoth Cliff Mine continues to outstrip all others in the country, and so far as native copper is concerned, all others in the world, yielding up its wealth at the rate of 90 tons a month of pure copper. Every foot that is sunk, and every fathom that is driven, brings to light new evidence of its unfailing richness. Mass after mass of the pure metal, from one to fifty tons weight, is taken from the vein, and every step through its long levels brings one to other masses, still standing and unmoved, of unknown size and value. The immense masses of pure metal coming from the prolific vein have astonished all who witnessed

it. It has now been tested to the depth of 400 feet, and many hundred feet in length, and it still sustains the same rich character. It is every where as regular and well defined as any lode in Cornwall, and there is just as good a prospect of its continuance and of its improvement as ever. At the Cliff Mine, also, during the past season, many valuable surface improvements have been made, buildings erected, and lands and roads improved. The North American Mine, near the Cliff, is yielding richly. About 175 tons of copper were shipped from it this season. Some 165 men are employed. Several shafts have been sunk to the vein, the lowest of which is 335 feet in depth. The five levels are from 100 to 400 feet in length. The surface improvements at this mine this season are valuable. A 33 horse power lifting engine is being put in operation, in a fine engine house. The stamp works consist of eight stamp heads, carried by steam power, stamping about 80 tons per week. The Cliff vein runs on to the premises of the North American Company, and their uncompleted shaft to the vein is to be sunk immediately. It is now down 30 feet, and the vein is supposed to be from 80 to 100 feet below the surface.

MINERALS IN PA.—Specimens of minerals have been found in lime quarries, near Norristown. The *Herald* says it is found mixed through a deposit of the most beautiful quartz rock ever seen, and very much resembles the rich treasures of the quartz rocks in California. Under the belief that it was something of the "same sort," a portion of the mineral was caused to be tested, when it was found to be a combination of silver and copper, with a large preponderance of silver. It is not found in large quantities yet, but the indications are that it is "about," and will be opened some of these days. In a section of country so remarkable for its known rich deposits as this portion of Pennsylvania, and so abounding in "indications," the discovery of silver, or even gold, would not be a matter of surprise to those who are acquainted with its geological formation.

WISCONSIN STATE CATTLE SHOW.—The *Madison Democrat* says: "The show was the first of the kind in the State, and was such as to astonish and delight the thousands of interested persons." There were great numbers of superior Durham, Devonshire, and native cattle; a variety of fine breeds of sheep, Merino and Pauley Merino Bucks, fine horses, fruits, flowers, vegetables, &c.

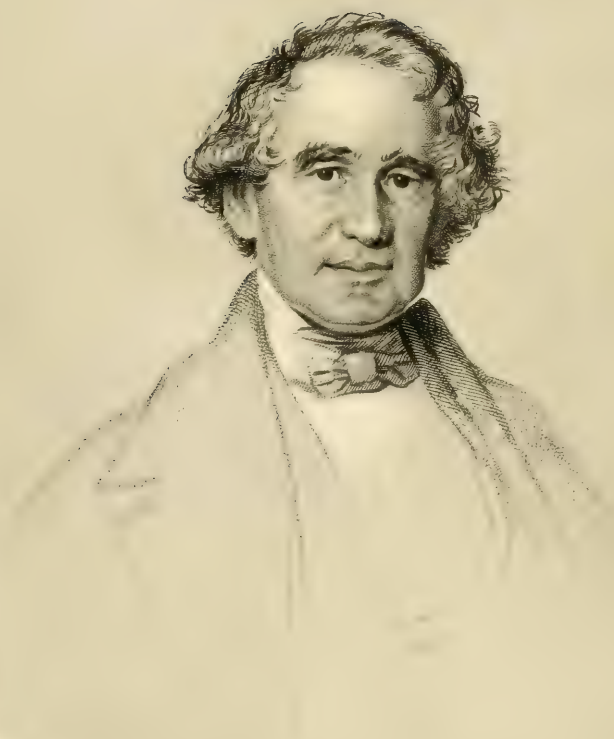
OHIO TOBACCO.—The *Dayton Journal* estimates the present year's crop of tobacco in the county of Montgomery, as worth more than \$100,000.

EDITORIAL AND SELECTED MISCELLANY.

THE best route between Philadelphia and New-York is the Camden and Amboy. Good cars, attentive and gentlemanly conductors, low fare, and great speed, are only a few of the many advantages of this over the old route. . . . PERSONS travelling between New-York and Boston will, of course, take the Fall River route, of which Tisdall & Borden, 70 West street, are the agents. Such splendid boats, attentive waiters, sumptuous tables, and such beautiful and spacious saloons, must be enjoyed to be appreciated. In relation to this, as also the Camden and Amboy route to Philadelphia, we speak from experience. . . . THERE is a territorial law in Oregon prohibiting the bringing or coming of negroes into the Territory. In a recent case against one Vanderpool, brought before Judge Nelson, this law was enforced, and the negro banished from the State. . . . AN Irishman said, if a few gooseberries give so fine a flavor to an apple pie, "that it would be a darlint of an apple pie which was made of gooseberries intirely." . . . DURING the whole period of the Exhibition, the bad money received amounted to £90 in silver and a half sovereign in gold. The half crowns were the most usual bad coin, and it is a noticeable fact that nearly all the bad money was taken on the half crown and five shilling days. . . . IRON buildings are rapidly increasing in Philadelphia. The uses of iron for building are only beginning to be appreciated. It is employed to a considerable extent in New-York city. . . . LATE advices from England state that Charles Dickens is at present keeping his terms in the Middle Temple, for the purpose of becoming a barrister. . . . KOSSUTH expressed a fine sentiment in his address at Southampton, when he said, referring to his own sufferings, "But I will not look to the past for griefs, only for instruction." . . . THE reason the whisking of a fiery stick produces a luminous circle, is because, from *excessive rapidity*, the rays from one point remain impressed on the retina of the eye, until the revolution completes the circle. . . . ONE third of the people of the United States live in towns and cities, of which there are no less than sixty-five which contain ten thousand inhabitants. . . . AN Irishman, writing a sketch of his life, says he early ran away from his father, because he discovered he was only his uncle! . . . THE *Philadelphia Ledger* describes a schooner being built in Taylor's shipyard, Camden, to have rotating masts, around which the sails are rolled, instead of being furled on yards. . . . RUSSIA will be one thousand years old next year; and her thousandth birthday is to be celebrated with great splendor. Kossuth, probably, would rather go to her funeral. . . . THE Virginians are talking about raising a monument to Capt. John Smith. If it is to be no higher than Washington Monument, we should like to contract for the work, provided all the John Smiths in the United States would only subscribe one dollar each. . . . THE man who thought he could coax a lawyer to take "a dollar less," is now trying to set fire to an iceberg with a cigar. . . . LA FONTAINE appeared heavy, coarse, and stupid; he could not speak and describe what he had just seen; but when he wrote, he was the model of poetry. . . . THE number of students at present at Yale College is 548. Of these, 34 are Theological students, 30 Law students, 27 Medical students, and 14 are students in Philosophy and the Arts. Of the literary societies connected with the College, the Lilonia has 174 members, and a library of 11,800 volumes. The Brothers in Unity have 206 members, and 11,725 vols.; and the Calliope has 63 members, and 7,500 volumes in their library. . . . It is estimated that over one hundred thousand stoves were made in Albany last year, and that full one hundred and twenty thousand will have been manufactured this year. . . . THE American Institute, New-York, honored Mr. Steers, designer of the yacht *America*, with a gold medal for a model of that beautiful vessel. . . . "Now that it freezes, take care of your nose, that it doesn't get froze, and wrap up your toes in warm woollen hose." The above, we suppose, was written in prose, by some one who knows the effect

of cold snows. . . . WE learn that, before leaving Buffalo for the West, Jenny Lind made a present to that excellent artist, Salvi, of a very beautiful cigar case, of massive gold, and of exquisite workmanship. . . . MR. McCORMICK, inventor of the American reaper, has contracted in England for the manufacture of five hundred machines, to be in readiness before next harvest, at which time he intends visiting England to dispose of them. . . . HE who has good health is young; he is rich who owes nothing; and he is happy who takes a good newspaper. . . . THE last Rhode Island Assembly got so far up with the spirit of the age as to abolish the barbarous law of imprisonment for debt. . . . It is proposed to erect a colossal statue to James Fenimore Cooper in one of the public squares in New-York city. . . . CORNELLIE, in conversation, was so insipid that he never failed of wearying. He did not even speak correctly that language of which he was such a master. . . . Two thousand cocoons are necessary to make one pound of raw silk. . . . THE coral grows like buds on a tree. . . . SECLUSION from the world is unhealthy for mind and body. . . . As we proceed upwards from the earth, its attractions become weaker. . . . ONE thousand tons of tobacco are annually squirted over the face of creation, and twenty tons of ivory are worn out chewing the weed every seven years. . . . HOLDRICH'S Statistical Almanac for the year 1852 estimates the number of newspapers published in the United States annually at 412,880,000, which would give sixteen and a half copies per year to every man, woman, and child. . . . ONCE give your passions the rein, and they become unmanageable. . . . AN Irishman coming to Boston from Lowell, took the stage in preference to the cars, because, as he said, he could ride four times as long for the same money. . . . A SPECULATOR offers \$25,000 for the right to pick up such lost articles as fell through the crevices of the floor in the Crystal Palace. The planks, it will be recollected, were left with a space between them. . . . AIR, food, exercise, and cleanliness, are the four pillars of health. . . . CRYSTALS of one body are always of the same form. . . . ADDISON was good company with his intimate friends, but in mixed company he preserved his dignity by a stiff and reserved silence. . . . ONE hundred cats were part of the cargo of a vessel which sailed recently for California. . . . THE following patriotic toast was given by Colonel A. A. Adams, at the celebration of the Fourth, in Warren, Ohio: "Uncle Sam—the gentleman whose birth-day we now celebrate—with a family of thirty millions of handsome girls and boys, and land enough to give each a farm, and have plenty left for his grandchildren." . . . MR. EWBANK, Commissioner of Patents, has received several specimens of wheat from the Salt Lake country. . . . IN Boston, there are 350 persons who sustain themselves in a population of 120,000 by prescribing and giving medicine. . . . Good fences make good neighbors. . . . IN 1813 the price of passage between New-York and Albany, by steamboat, was \$7. . . . THE Astor Library, now in the course of construction, is slowly progressing. It is in the Romanesque style of architecture. . . . NOTHING sits so gracefully upon children, and makes them so lovely, as habitual respect and dutiful deportment towards their parents and their superiors. . . . HON. EDWARD DICKINSON, of Amherst, Mass., has grown some figs this year, which are represented to be equal to the Smyrna figs. . . . A FOOL, says the Arab proverb, may be known by six things: anger without cause, speech without profit, change without motive, inquiry without object, putting trust in a stranger, and not knowing his friends from his foes. . . . A BEAUTIFUL specimen of the ostrich species lately arrived at Salem, Mass. . . . AN invoice of gold dust was delivered in Liverpool by the Pacific in thirty-seven days from its shipment at San Francisco. . . . THERE were over 100,000 strangers in Boston during the "jubilee week." . . . It is estimated that the London Exhibition will yield a net profit of one million of dollars. The great questions now are, to whom does this money belong, and what shall be done with it? . . . NINETY students have entered the Brown University for the new term.





Henry B. Cary

The Plough, the Loom, and the Anvil.

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CENTRALIZATION.

BY H. C. CAREY.

"THROUGHOUT three centuries, the house of Austria had exhausted against Hungary the acts of open violence and of secret intrigue; but the Hungarian municipal instructor had still, under the most arduous circumstances, conserved to Hungary some spirit of public life, and some part of constitutional liberty. It was at the time when this fatal sickness of political feeling to *centralize every power*, and to tutor the people into this notion of political wisdom—when this fatal sickness spread over the continent, and made its way even to his own country, so that it became *almost the fashion and almost the mark of intelligence to head toward the doctrine of centralization*, that he, with a few friends who stood by him, struggled against this storm, against those rushing waves coming over the spirit of Europe, because he regarded, and ever should regard, municipal life as a public benefit, without which there is no practical freedom whatever, and for the loss of which he thought all ministerial responsibilities and parliamentary privileges but a pitiful equivalent. In this land [England] were seen the finest fruits of this conquest of liberty—the glory outside, the freedom within, unwithered by the blighting finger of centralization."

SUCH are the words of M. Kossuth, as found in his first English speech, the one made at Southampton. Since then, he has exhibited himself every where as the advocate of local action and the opponent of centralization; and yet, singularly enough, every where as the advocate of the system of British free trade, the most remarkable case of centralization that the world has yet seen, and by far the most destructive that has existed since the downfall of the Roman Empire. In his speech at London, he informed his hearers that "the very day when Hungary proclaimed its independence, and intrusted" him "to be the chief," his "first deed was to send instructions" to his representative in England, "to make known to the English Government that the barriers of Hungary had fallen, and that Hungary was open to the industry of England."

There are few persons now living that are likely to exercise more influence over public opinion than is the late Governor of Hungary; and few who have shown themselves more entitled so to do, because of the talent and the virtue he has displayed; few, therefore, whose mistakes are likely more to prejudice the cause of real freedom; and it may, therefore, not be amiss to examine the views he has thus put forth, with a view to expose error, if error exist. That it does so, I confidently believe: as fully am I persuaded that its existence can be proved.

For more than a century, it has been the object of England to monopolize the trade and manufactures of the world, to *centralize* within her limits the machinery of conversion and exchange for the farmers and planters of the world. With a view to the centralization of the trade of Ireland in English hands, the people of that country were forbidden to make their exchanges with their fellow-colonists, except through the medium of English merchants, English

ships, and English ports. To compel the people of that country to send their wool to England, there to be converted into cloth by English hands, and by aid of English machinery, the manufacture of woolens was "discouraged" by the Revolutionary Government of 1688. To compel the people of these colonies to make their exchanges in England, and thus to *centralize* the machinery of conversion, manufactures of every kind were, as far as possible, restrained by law, and even the trade between colony and colony was subjected to regulations having for their object to compel the colonists of the south to carry their produce to English ports, there to be exchanged for the produce of their fellow-colonists of the north. The emigration of artisans was prohibited, lest they should carry abroad the knowledge required for enabling the producer of wool to bring the consumer to his side, and thus impede the growth of *centralization*. The invention of machinery for the conversion of cotton into cloth was accompanied by the enactment of laws prohibiting the export of such machinery, lest it might be transported to India, there to aid the native manufacturer in his labors for the production of cloth. Such was the course adopted in reference to all other descriptions of machinery, as well as in reference even to the export of men skilled in the mining of coal. The object of all these interferences with the natural rights of man was that of compelling the farmers and planters of the world to export their produce in the rudest and most expensive forms, and to use English ships for its transportation, while English merchants transacted the business, and English machinery compressed the produce into the forms fitting it for the use of man. Here was an effort at centralization on the largest scale that it had ever yet been tried, except in the Roman empire, and its effects were calculated to be even more injurious. The people of the Roman provinces were, it is true, heavily taxed for the maintenance of the great central power, and Rome grew in size and population, as Italy, Sicily, Greece, Asia, Africa, Gaul, and Britain, were successively exhausted; yet the people of the provinces were every where left free to combine their exertions for the production of the means required for the payment of the taxes. The object of the British system was every where to prevent the combination of effort for the purpose of rendering labor productive, and thus to cause waste of labor. The planter of the West Indies might not employ the leisure of his people in winter in refining the sugar grown in summer. The wool-grower of Ireland might not employ the leisure of his people in converting the wool into cloth. The cotton-grower of India might not employ his own spare time, or that of his neighbors, in converting into yarn the produce of his fields. The colonist of these provinces might not, at his leisure, aid his neighbor in converting his pig iron into nails, even for the purpose of shoeing the horses employed upon his farm. Every thing was required to be carried to England, and carried there in the form least fitted for transportation, that the sugar might there be refined; that the sheep's wool and the cotton wool might there be converted into cloth; that the pig iron might there be converted into nails or spikes; and that the sugar, the rice, and the corn, might there be eaten by the men who performed the work of conversion, while the men who raised the food and the wool, and made the iron, were unemployed at home.

At the close of the late war, the British empire exhibited a case of *commercial centralization* such as the world had never before seen, and compared with which those established by Venice and Genoa, the Hanse Towns and Holland, sink into insignificance. In Europe, Ireland, her subject, and Portugal, her ally, performed almost all their exchanges in her ports, and by aid of her machinery. In Africa, she had the important colony of the Cape; in Asia, Hindostan, with its hundred millions of inhabitants; in the Western

World, she had the Canadas, Nova-Scotia, New-Brunswick, the West Indies, and Honduras; and to her belonged all Australia, with the power of compelling the people of all the countries that have been named to come up to her with their products, that they might be taxed at her pleasure; and a mighty power it was. It is, however, to political, and not to commercial centralization that M. Kossuth objects; and yet an examination of the two will show that the latter is by far the most destructive. The object of both is that of securing the power of taxation. In France, the type of modern centralization and frequently referred to as such, there are collected about forty francs, per head, in the form of taxes, a large portion of which is carried up to Paris, to be there expended; and it is in the power to collect those taxes and to direct the expenditure of their proceeds, that the great centralization of that country consists. Not a road can be made, nor a bridge be built, without authority from Paris. Compare, however, forty francs, or seven dollars and a half, per head, with the waste of labor in Ireland, consequent upon the absence of the power to bring the loom and the anvil to the side of the plough and the harrow, and it will be found to sink into insignificance. Let it again be compared with the loss resulting from the perpetual abstraction of the soil, in the form of produce, to be consumed in distant markets, returning to the land none of the manure, and it will be found that in that form alone the tax imposed by centralization is fully equal to it. If next we take the loss resulting from a total inability to bring into activity the coal, the iron ore, the limestone, and other of the mineral treasures of the earth, with which Ireland abounds—the waste of so many substances that are elsewhere made available to human purposes—the poverty of machinery resulting from all this taxation and all this waste—and the waste of labor upon poor soils, that might be given to rich ones, and would be so given but for the poverty which forbids that they should be reclaimed; and then add the whole together, and we shall find that, heavy as is the taxation of France, resulting from political centralization, it is as nothing compared with the taxation of Ireland, resulting from commercial centralization, the worst of all the forms of tyranny that the ingenuity of man has ever yet devised. Its consequences are seen in this fact, that the country—one of those most richly endowed by nature—is being depopulated, and is likely to be utterly abandoned by the whole Irish race, unable to live under the despotism of the British commercial system, the leading advocate of which tells its readers that they, its editors,

“Have repeated almost *ad nauseam* that the people are leaving us at the rate of near a thousand a day. In Ireland, the fact is brought home to the understanding in so forcible a manner by the actual sight of emigrant trains, emigrant ships, *depopulated districts, ruined habitations*, and labor beginning to rise in the market, that it cannot be disposed of so easily as in this country. In England, it has been anticipated, by some writers, that when the Irish population should be reduced to a certain low level, the inducements to remain would rise so high that the migration would stop, and the remnant left behind would be contentedly and permanently attached to the soil. The Irish authorities, as we are disposed to think very correctly, *do not expect the migration to stop as the population has assumed its proper proportion to the work to be done.* The people who have been in the habit of paying 30s. an acre would not now remain on the land if it were reduced to 20s. or 10s.; they will have it at no price. Their minds are completely made up to go after their friends—to go home; that home not being ‘Ould Ireland,’ but the ‘Far West.’ *The stream once set that way, it will not stop till Ireland is absolutely depopulated*, and the only question is, when will that be? Twenty years at the present rate would take away the whole of the industrious classes, leaving only the proprietors and their families, members of the learned professions, and those whose age or infirmities keep them at home. *What if it should come to pass that, before another twenty years, the whole Celtic race shall have disappeared from these isles, and the problem of seven centuries received its solution?*”—*Times*.

It is here supposed that depopulation tends to bring down the number of people to "a proper proportion to the work to be done;" and it seems to be forgotten that each man who leaves the kingdom is, or should be, a consumer as well as a producer, and that, if he sold his labor, he must necessarily purchase something produced by the labor of others; and that, if his departure diminished the quantity of labor in market, it likewise diminished the demand for that of those he left behind. Further, it is forgotten that it is by combination of action that labor is made productive, and that each step in the progress of depopulation diminishes the power of association, *every act of which is an act of trade*; and that each step in this direction renders it, from day to day, more necessary to carry out the process already so well begun.

If next we turn to Scotland, we find the same process now in full operation—depopulation, as a consequence of centralization—precisely as it was witnessed in Italy of the olden time, where the city grew in size by the exhaustion of the country, and the land became from day to day more and more monopolized by the few, and slaves cultivated the soil that before was owned by freemen. The northern counties have been, by the expulsion of their inhabitants, converted into a desert, and the details of the system now in progress are to the last degree revolting to humanity. In the west are nearly a hundred thousand people with whom the idea of perishing by starvation is quite familiar, while the lanes and alleys of Glasgow are filled with the remnants of families that have been expelled from the land. Such is the effect of commercial centralization within the limits of Great Britain itself; and if with this we compare the worst results of the system of France, we shall find that the people of Scotland would gain by an exchange from commercial to political centralization.

Turn we now to India.* Half a century since, the people of that country supplied the world with cotton goods. Their machinery was rough, it is true, but it could readily have been improved; and it would have cost far less to carry to Calcutta a few ship-loads of spindles and looms to aid in the conversion of Hindoo cotton into clothing for Hindoo men and women, by aid of Hindoo laborers, eating Hindoo rice, than to carry tens of thousands of ship-loads of cotton and rice to Manchester, to be returned in the form of cloth to Calcutta; thence to be carried into the interior, in a country totally destitute of roads and bridges. Such, however, was not the policy of England. She would *not* permit the machinery of manufacture to go to India, and she *would* insist on supplying India with cotton goods. In exchange, she took rice and cotton; but, to prevent improvement in that country, she subjected cleaned rice to a heavy duty, from which paddy, or rough rice, was exempted; a measure that could have been exceeded in folly and rapacity only by a similar bounty on the import of cotton in the rough, with a view to secure the profit of ginning it.

England had grown rich. For more than half a century the wealth of India had been in course of being transferred to her coffers, by aid of Clives, and Hastingses, and numerous other members of the same family—men of the great race who live by the labor of others—and thus, while the one became enriched, the other became poorer from day to day. Towns and villages, by thousands, had been abandoned during endless wars, and extensive districts, embracing the most fertile lands, had relapsed into jungle; and tigers now occupied the ground that before had given food and clothing to hundreds of

* The following sketch of the course of affairs in India is taken from my work, "The Past, Present, and Future," with, however, occasional alterations.

thousands of poor but industrious people ; the consequence of which was, that the poorest soils were cultivated with the worst machinery.

The stock of a ryot consisted of a plough not capable of cutting deep furrows, and only intended to scratch the surface of the soil, with two or three pairs of half-starved oxen. This, a sickle used for a scythe, and a small spade or hoe for weeding, constituted almost his only implements for husbandry. Fagots of loose sticks, bound together, served for a harrow. Carts could be little used in a country where there were no roads, or none but bad ones. Corn, when reaped, was heaped in a careless pile in the open air, to wait his leisure for threshing, which was performed, not by manual labor, but by the simple operation of cattle treading it out of the ear. He had no barns for stacking or storing grain, which was preserved, when required, in jars of unbaked earth, or baskets made of twigs or grass. The cattle were fed in the jungle, or common waste land adjoining his farm ; and buffaloes, thus supported, generally supplied him with milk. Horses were altogether unused in husbandry. The fields had no enclosures. Production was small, and the great absentee landlord took one half of the small amount, thus rendering impossible any improvement of his machinery. He could not buy looms and spinning-jennies, even if England would have sold them, which she would not. The necessary result was, that the poor manufacturer was first driven out of the market of the world, and then out of his own ; and thus the small existing tendency to concentration diminished as centralization increased. From being a consumer side by side with the producer of cotton, he was driven to seek elsewhere poor soils that he might scratch with his stick, in the almost vain hope of obtaining a sufficiency of food ; and thus was the amount of raw cotton to be exported increased for the supposed benefit of ships and factories owned by British capitalists, who heeded little the sufferings of the poor Hindoo weaver, deprived of all market for his industry. Having thus compelled the use of the inferior machinery of exchange in the form of roads, to be used for transportation of food or cotton, in place of better machinery previously used for converting the food and cotton into cloth, the export of cotton now went on ; but at length the people of the northern United States, driven to the poor soils of new States and Territories to raise food, instead of concentrating themselves on the rich soils of the old ones, for the purpose of consuming it, forced the planter from the production of food to that of cotton, with which he filled the world ; and now the poor Hindoo could produce for Europe neither the raw material nor the cloth. Next, we find him, in default of other employment, largely engaged in cultivating opium for his neighbors, the Chinese. The trade grows large, and Chinamen use it freely, because cheaply supplied. The Government takes alarm, and destroys the opium, and England takes offense ; and now Chinese cities are ruined, their men destroyed, and their women outraged, and the country is laid waste, that English subjects may employ in producing intoxicating drugs the labor that should be employed in converting cotton into cloth, while the laborer ate food produced by the man who was to wear the cloth.

The tendency of the whole system of commercial centralization is that of compelling men to waste labor in transportation that might profitably be applied to production. Cotton and rice *must* go to England, that Englishmen may eat the one and fashion the other. Such being the law, it might be supposed that some labor might be applied towards perfecting, in some small degree, that description of the machinery of exchange, the use of which was still to be permitted : to wit, roads and bridges ; but the reader would greatly err who might suppose that possible. History affords no record of any proceed-

ing of the kind on the part of that worst species of tyrants, the trader armed with power over his fellow-men. Of the vast revenues of that country, derived from the appropriation of one half of the gross produce, scarcely a rupee goes back upon the land. I have now before me an account of all the works of improvement in that country, with its population of one hundred millions, during a period of seven years, and it would be exceeded by the State of Rhode Island, with its one hundred thousand inhabitants. It is stated that the Government *does* now do something: that it actually expends twelve or fifteen thousand pounds per annum in the repair of roads! and that, too, in a country whose people are forced by erroneous legislation, over which they can have no control, to export its great product, because they may not be permitted to obtain machinery for fashioning it at home. The produce of the great cotton-growing districts on the Nerbudda is carried on oxen, each taking one hundred and sixty pounds, at the extreme rate, in fair weather, of seven miles a day. The distance to Mirzapore, on the Ganges, is five hundred miles, and the cost is two and a half pence, or five cents, per pound. Thence it goes to Calcutta, a distance of eight hundred miles, by water, unaided, I believe, by steam. From another portion of the cotton-growing districts, in the Deccan, the transport occupies a continuous journey of two months; and in the rainy season the road is impassable, and the traffic of the country is at a stand. *In the absence of even a defined road*, the carriers, with their pack-cattle, are compelled to travel by daylight to prevent the loss of their bullocks in the jungles through which they have to pass, and this under a burning sun of from one hundred to one hundred and forty degrees. If the horde, sometimes amounting to a thousand, is overtaken by rain, the cotton, saturated with moisture, becomes heavy, and the black, clayey soil, *through which lies the whole line of road*, sinks under the feet of a man above the ankle, and under that of a laden ox to the knees; and in this predicament the cargo lies sometimes for weeks on the ground, and the merchant is ruined! "Black, clayey soils," rich and fertile, are here superabundant; but the poor wretch who raises the cotton must cultivate the high lands that require neither clearing nor drainage, and his masters take half the product of their poor soils, while refusing even to make a road *through* the rich ones; yet forcing him to send his cotton to market to be exchanged for cotton cloth, manufactured thousands of miles distant. A system better calculated to compel men to continue cultivating the poorest soils, by aid of sticks, could not be devised; yet this is but a fair specimen of commercial centralization wherever it has existed.

We have here one of the destructive effects of the British system, but it is by no means the last. Of the revenues of this vast empire, no small share is distributed among the infinite number of great men charged with the duties of government, who pay themselves liberally; for a very few years of "exile" are deemed to entitle each to acquire fortune for himself and his children.* Salaries are large, and savings are considerable, and these savings are lent to the Government to enable it to pay the salaries; for, large as are the revenues, the debt grows regularly and rapidly. The lender, having accumulated a fortune, and having safely invested it at large interest, now returns home, and thenceforth he is entitled to an annual remittance of the interest; and to pay him and others like him, and to make dividends on East India stock, almost twenty millions of dollars are annually required, a sum sufficient to make yearly a railroad of six hundred miles; and this is to be paid by men who

* For a statement of the enormous salaries paid to officers of Government, see page 285, *ante*.

think that they might perhaps continue to grow cotton, if, in addition to bullocks, *they only had carts!*

Within the last sixty years, there has been levied on the poor Hindoos by and for the uses of that Government, to aid it in making dividends, paying salaries, and carrying on wars, in which, like that of Afghanistan, the poor tax-payers had no interest, more than six thousand millions of dollars! In return for all this, the poor people have received at the hands of their masters neither roads, nor canals, nor public works of any description, except barracks, prisons, and hospitals for their own troops. Deprived of all power to improve their wretched machinery of production, they are compelled to abandon rich lands, and cultivate the poorest—those from which the man who is destitute of a spade and an axe always draws his supplies of food. Such lands can afford no more than is absolutely necessary for the support of existence; yet of the miserable product the company takes one half, and calls it *rent*, and a large portion of the balance, and calls it *taxes*. The necessary consequence is, that any thing like accumulation is impossible. Each year must furnish the supplies of the year, and when a failure of crop takes place, the miserable people are swept off by hundreds of thousands. In the twenty years from 1818 to 1838, there were *nine years of famine*. That of 1837-8 was terrific, yet the unfortunate people were surrounded by millions upon millions of acres of the richest lands in the world, that they could not cultivate, because the Government left them no power to improve their machinery. The rivers were choked with dead bodies in the provinces where this very abundance of waste land existed. The air putrified with the stench of dead and dying human beings and animals, and the jackals and vultures were seen preying on the still animated bodies of our fellow-creatures. Mothers drowned their children by night, unwilling that the morning sun should witness their famishing state, and whole families of respectability poisoned themselves, rather than beg a little rice for their support; and, although a rupee's worth (half a dollar) of grain would sustain a man for thirty days, hydrophobia was becoming as prevalent as cholera!

In other quarters, the dead were lying in hundreds by the road-side, and it became necessary to form companies to carry them to the river, with a view to the prevention of pestilence. In Agra, the deaths were at the rate of ten thousand per month; and yet at this very period, enormous sums, the proceeds of taxes imposed on these wretched beings, were being lavished on the war in Afghanistan, having for its object a further extension of the system of commercial centralization.

So exhausted are these unfortunate people, that it becomes necessary frequently to remit the taxes, because of inability to collect them. No better evidence of their wretchedness need be offered than the fact that in lower Bengal, one of the most prosperous portions of the Company's territories, that in which they have been longest and most firmly established, the consumption of salt in three years, from 1834 to 1837, was less by one fifth than it had been in the three years from 1819 to 1822. Such is the necessary effect of a system that drives men from rich soils to poor ones, and then refuses to supply even a defined road to the unfortunate cultivator, who would consider himself "rich indeed," if that road were made practicable for a cart, to enable him to drag the produce of his miserable soils through the rich black clay that lies between him and the far-distant river.

Throughout India, the class of *native* great men—of those who live by the labor of others—is large. To them, however, is to be added the whole body of their foreign masters. Till recently, one of these latter, who might have

assaulted a native or ploughed up his land, could drag him to a distant city, where the cost of litigation is expensive to a degree five times exceeding those of the courts of England, enormous even as *they* are. Officers of these courts accumulate immense fortunes in a few years, out of the substance of ruined suitors. At Madras, the Supreme Court has, says Mr. Macaulay, fulfilled its mission: it has beggared every rich native within its jurisdiction, and is now inactive only for want of somebody to ruin. Great men are very numerous, and their shares of the produce of the poor soils are always large.* The labor of collecting their taxes is great, and they fix themselves their reward. The system is the same wherever men are forced to rely upon those soils for food. The many are weak and disunited, and the few plunder them with impunity; and this is the natural consequence of the exhausting system of commercial centralization.

The Hindoo may well say, that "nothing is left him but his skin." He knows no freedom but to die: and yet he is the subject of England, whose people are furnishing the world with missionary bishops to teach Christianity, the basis of which is, "Do unto your neighbor as ye would that he should do unto you." He is the *slave* of the same men who look with "holy horror" upon the sugar of Brazil and upon the cotton of Georgia; the latter raised by men who are better fed, better clothed, better lodged, and better taught, than a considerable portion of the people of England itself. He is their slave; for they will not permit him to combine his exertions with those of his fellow-men, to render their joint labor productive. They will compel him to send food and cotton to Manchester, that the latter may be twisted and woven, and then sent back to him. They will not permit concentration, without which the rich soils cannot be reduced to cultivation; and until they shall be cultivated, famine and pestilence must continue to sweep off the population; and East India proprietors must continue to *waste and destroy*, annually, millions of bushels of salt, that they may be enabled to realize their dividends from selling the balance at a monopoly price to the starving wretch who labors one half of the year to pay his rent, and one fourth of the balance to pay for that salt. The *ecorcheurs* of France, who flayed the unhappy people engaged in the preparation of the great food-producing machine, were bad; but those of England in India are worse. It is, throughout, a system of unmatched atrocity. Such is the condition of the men who raise the "free" cotton of India, for the maintenance of the "free-trade" system of England.

Nearly a century has now rolled round, since, by the battle of Plassy, the ascendancy of England in that great country was secured; and such is the result. The Hindoo raises cotton, but he consumes only so much as will give him a strip to cover his loins. He raises rice, but he eats little, for he may not even clean it; and all this is done that England may be the workshop of the world, and that great manufacturers may accumulate millions by aid of the labor of over-worked and under-fed operatives. A system more selfish and unsound could not be conceived; nor could one more utterly destructive, both for herself and others, possibly exist. The results every where are the same—perpetual change of system, and perpetual need of change. Canada stagnates, and governors and forms of government are changed; but Canada still is paralyzed. Ireland starves, and Irishmen shoot agents; and curfew laws, and bills prohibiting the carrying of arms, are passed: but Ireland still starves

* A distinguished political economist, just now appointed to a judgeship in India, is to have, as the journals of the day inform us, £10,000, or almost \$50,000 per annum, being double the salary of the President of this Union.

and borrows, and *will not* pay, because she *cannot*. Jamaica tries hill-coolies and free negroes, and coolies and negroes fail; and Jamaica still is poor. India cannot send cotton that will sell, and agents are sent to teach the poor Hindoo, who still cannot send cotton, because the rich soils are so abundant that his half-starved cattle, driven by their half-fed owner, cannot wade through them. Australia raises, on the poorest soils, a small supply of wool, for which she must be paid, while paying nothing for six millions of dollars annually charged to her account. English capitalists now propose railroads in India; but railroads never pay when made for people who cultivate the poorest soils, and cannot themselves make roads. India will grow rich, and rapidly grow, when India shall be independent, and shall protect herself against the centralizing power of England; but until she shall do so, and until she shall acquire power to place the consumer by the side of the producer, she must remain poor. In few countries of the world would population and wealth grow so rapidly, were she left alone; but so long as she must remit twenty millions to pay interest, and raise so many other millions to pay armies and officers, while compelled to cultivate the poorest soils with the worst machinery, neither can increase. England may change, and change again, abroad; but, before she can effect any improvement, she must learn to look at home, and not abroad; she must abandon the use of temporary machinery, and take to that which is permanent; she must *raise her own* food, and permit others to *consume their own*. She must increase her producers, and she must permit others to increase their consumers; and when she shall do that, India and Canada, Jamaica and Australia, will grow rich, while she will grow richer; but she will then cease to want colonies, or armies, or fleets, or great men. In the annals of the world, there is recorded no instance of self-deception greater than that which she now exhibits, except, perhaps, in that of France, who seeks dominion by aid of the sword alone, while she goes with sword and yard-stick. To which of the two should be awarded the credit of doing most to prevent the increase of human happiness, it might be difficult to decide, but I am disposed to think that she would carry off the palm. France wasted the Palatine with fire and sword. The work accomplished, the armies were withdrawn. The poor people who were left breathed again; and, in time, they might restore their houses, and obtain fresh spades and ploughs to enable them to cultivate the rich soils. The yard-stick of England is a much more effective instrument. It produces famines and pestilences, recurring year after year, to sweep off all the population rendered surplus by the denial of the power of concentration. *Her* army is never withdrawn. The houses that it levels *cannot* be rebuilt. The spades and ploughs that it destroys *cannot* be replaced. The people *must* go to the poor soils, and they *must* have famines to keep the population down to the supply of food that England permits them to produce. The Company are disciples of Mr. Malthus. They take rent for the use of the "original and indestructible powers" of a soil that possesses scarcely any power, and thus starve the population down to the level of subsistence. Such is centralization in British India!

As the people of India become more and more impoverished, the land tends to centralize itself in fewer hands, with daily tendency to increasing centralization of power in the hands of the middlemen of Calcutta, sometimes styled "the merchant princes" of India, a class of men who produce nothing themselves, yet thrive by the taxation imposed by centralization upon the poor producers and poor consumers of the country. We live in the age of great cities. Glasgow grows as Sutherland is depopulated, and the people of the Western Highlands and those of the islands, north and west, are driven into

exile. Dublin, too, grows as famine and pestilence decimate the people of Ireland; and Manchester, Birmingham, and London, increase in numbers as Ireland and India are more and more impoverished.

It is, nevertheless, to the system that produces such effects that M. Kossuth looks for aid in the establishment of municipal institutions in Hungary! Upon what, however, are such institutions to be based? Is it not upon the people? and if the system expels the whole Irish nation, what becomes of their institutions? Where are the institutions of the north of Scotland? What has become of the vast body of village proprietors of India, and their local institutions? Time was when every village had such institutions; but they have disappeared as the little proprietors and the local manufactures have disappeared, and as the land has been more and more monopolized, with the progress of what in the Manchester school of political economy is known as free trade. For the establishment and maintenance of local self-government, it is needed that men should live near each other, combining their efforts for the common good; but British free trade repudiates the idea of association. It would have all the people of India to raise cotton, and all the people of England to manufacture it; and, that such might be the case, it would, as it did, forbid the export to that country of any machinery for converting the cotton into cloth. It would have a monopoly of the power of taxing the world, while French and Austrian centralization looks only to the taxation of the people of France, of Austria, and of Hungary.

Look where we may throughout the British colonies, we find a tendency to centralization of power constantly increasing with the desire for the centralization of trade. In the days of the Stuarts, the new colonies obtained charters, by virtue of which they governed themselves; but in more recent times, such colonies are governed from home, and the consequence is seen in the fact that men of small capacity are every where seen to be receiving large salaries for misgoverning the poor people who fly from home to seek in the colonies the means of obtaining supplies of food and clothing. To "centralize every power," in relation to the colonies, is now regarded as being the height of "political wisdom." And yet it is to such a system as this that M. Kossuth is induced to look, as the antipodes of centralization!

Again: if we look to England herself, we find that precisely as the land becomes more and more consolidated, government commissions, invested with arbitrary power, are superseding the municipal institutions of earlier and more prosperous days; and so universal is now this tendency, that, to use the words of the great Hungarian, in speaking of the continent of Europe, it has become "almost the fashion, and almost the mark of intelligence to head towards the doctrine of centralization." Not a session of Parliament now passes by, without a new usurpation of power on the part of the central authority; and these usurpations are always defended on the ground of necessity. But whence has arisen this necessity? Is it, is or it not, that, under the system that has depopulated and ruined Ireland and India, the people of England have become poorer and weaker, and less able to protect themselves by aid of the local institutions of earlier days? In answer to this, it is needed but to remark the fact, that of the two hundred and thirty thousand independent owners of English land that existed seventy years since, almost two hundred thousand have already disappeared, and their places are now occupied by day-laborers and tenants-at-will, the growth of centralization. It is, nevertheless, to a country that presents to view a state of things like this, that we are referred as presenting one in which are seen "the finest fruits of the conquest of liberty; the glory outside, the freedom within, unwithered by the

blighting finger of centralization!" Widely different from this is the view presented of the course of events by one of the earliest of the friends of Hungary, and one of the most eminent of the writers of our day, Walter Savage Landor, who says: "Centralization is the grasp of despotism; municipalities are the commons and promenades of a free people. By the contraction of the one, and the enclosure of the other, *we are losing our strength and freshness every day*;"* and such must be the conclusion of every man who studies the course of English legislation.

The tendency of the English commercial system is adverse to local association for any purpose whatsoever, and it is so because the object which it seeks to accomplish is the monopoly of the manufactures and trade of the world; and monopoly and freedom of trade, or of man, are inconsistent with each other. The freeman exchanges his labor and its proceeds where he will—the slave exchanges where he may—and every attempt at commercial centralization has for its object to limit the power of those subject to it, as to the place at which they will exchange their labor and its products, and thus to convert the freeman into the slave. The power of self-government grows with the growth of wealth and population, for with each step in that direction there is an increased power and increased tendency to associate, and every act of association is, as has before been said, an act of trade. It diminishes with every diminution of wealth and population; and such is the tendency not only in all the countries that have free trade with England,—Ireland, Scotland, Portugal, the West Indies, India, the Cape of Good Hope,—but also in England itself, in which the habit of combined exertion for any purpose diminishes as the land becomes monopolized and as the day-laborer replaces the little proprietor; and of this no better evidence need be desired than the constantly increasing tendency to the investment in the funds of small savings by persons who, under a different system, would find their little capitals far more productive, could they themselves use them in aid of their own efforts. The same may be said of the vast extension of the system of life insurance, one of the surest evidences of diminishing power to employ labor and capital with advantage; and yet these very facts are perpetually adduced by the advocates of the existing system as evidences of progress. They prove increasing centralization, and centralization, despotism, and poverty go always hand-in-hand with each other.

Centralization and civilization are the antipodes of each other, and they are so because the one is the necessary accompaniment of despotism, while the other grows with growing freedom, and diminishes as freedom passes away. Centralization grows daily throughout the British empire; and so long as England shall continue to be the head of that empire and the dictator of its policy, her claims to rank in civilization must be weighed after an examination of the condition of her whole people: the powerful duke and the occupant of the mud hovel; the great chief of the clan and his miserable tenant; the wealthy manufacturer and the poor operative; the Irish landholder and his starving tenant; the rich West India proprietor and his late slave; the East India proprietor and his present slaves, decimated, at brief intervals, by famine and pestilence. So considered, the claims of England to civilization do not stand high; nor can they do so while she shall continue to present to view such enormous contrasts.

Half a century since, and perhaps even more recently, might be seen in the streets of Lisbon men with good coats on their backs, cocked hats upon their

* Quoted by J. Toulmin Smith, Esq., in his work entitled "Local Self-Government."

heads, and swords by their sides, but with bare feet and legs. These men thought themselves civilized, and so does England; and the civilization of the two is nearly alike. England has a very good coat, by which her body is well covered, but it has very short sleeves. The arms, to a great extent, are naked; and those arms represent a large portion of the people of England, badly fed, badly clothed, and very badly educated, while surrounded by rich lands, great mills, well-endowed colleges, and vastly rich bishops and archbishops. Her body is well covered, but her feet and legs, Ireland and India, are bare; and she keeps them bare, that she may have more to put upon her body; and she retains the sword by her side, that she may compel them to remain bare, that she may compel them to continue cultivating poor soils in sight of rich ones, undrained because of poverty, and uncultivated because undrained. In all this there is abundant centralization, but no civilization.

FARMING IN THE "PLATTE COUNTRY," MISSOURI.

To the Editors of the Plough, the Loom, and the Anvil.

It is my intention to contribute occasionally a short article to your valuable journal, on farming and the products of the north-western part of Missouri, a country not as highly appreciated as it should be, especially when we are soon to have the advantages of a railroad to connect with the eastern lines, terminating at your city.

When that facility for transporting the products of this country to market is offered, the North will realize and learn what we now know to be true, that there is no country on earth can surpass, and we think none can equal, the Platte country land for productiveness and large yield, with little labor. The original log-cabins, by thousands, that entitled the occupants to their land by preëmption, are still to be seen here; but while the owners have not built fine houses, they have, notwithstanding, done something in the way of improvement in farming, without the aid of chemical, mineralogical, or geological science. We know that soil, to produce wheat, corn, or hemp, requires moisture, warmth, air, and the light of the sun; but those of us who are *natives* know nothing practically of the use of *guano*, *gypsum*, or of any thing being necessary to enrich soil already too rich, and which produces better after many years' cultivation, especially in the wheat crop. We usually fill our barns easily, and find a home market at 75 cents per bushel for wheat. But this year the crop has almost entirely failed—not more than one third of the usual quantity raised—and yet our country is in a prosperous condition, our soil being well adapted to every agricultural production. While our neighbors from Ohio, Pennsylvania, and Indiana, who turn their attention almost entirely to the culture of wheat, fail in raising a good crop, we have the Kentuckians, Virginians, and Tennesseians amongst us, who will have their hemp, pork, and cattle; and at all times some one of the great staples will be abundant and bear a good price. Hemp is our great staple, although wheat can be made more profitable. It seldom ever fails, unless it is an exceedingly bad season, such as the last, when we had constant rains during the spring months, causing many crops to be entirely ruined. Every variety of wheat has been tried here, and I am very sure the Mediterranean is the best for this climate and soil, whilst the smooth head is the most likely to fail of a good yield. The grain, when well matured, is often small and shriveled, whilst the Mediterranean is long, full, and plump, weighing from 60 to 68 lbs. per bushel. But much is to be learned yet by our farmers in the culture of wheat in this country.

All the poor crops can be traced to some mismanagement of the farmer. Whenever good clean seed is sown by the first of September, at the rate of one and a half bushels to the acre, and the ground well rolled and made level, a yield of from 25 to 30 bushels to the acre is almost sure to be harvested. A small farm of 80 acres, 50 of which is cleared land, can be bought here for about 500 dollars. Sow 50 acres of this in wheat :

Buy the seed, say 70 bushels, at 75 cents, - - -	\$53 50
Pay for ploughing, sowing, harrowing, and rolling, at \$1 per acre, - - - - -	50 00
Cutting, - - - - -	50 00
Thrashing and sacking, - - - - -	70 00
	\$223 50

Showing two hundred and twenty-three dollars and fifty cents for all expenses attending the cultivation of 50 acres, or four dollars and forty-seven cents per acre. The 50 acres will yield fifteen hundred bushels of good clean wheat, worth as much at home as at St. Louis, and will command at this time, at mills, from 60 to 75 cents, making, for the fifteen hundred bushels, at the latter price, - - - - - \$1125 00

Less for expenses, - - - - -	223 50

Nett profit, - - - - -	\$801 50
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This cannot always be done, but it has been done, and may be done again ; or, if *one half* of the amount is realized, it will nearly pay for a small farm in this part of the West.

Savannah, Mo., Dec. 1, 1851.

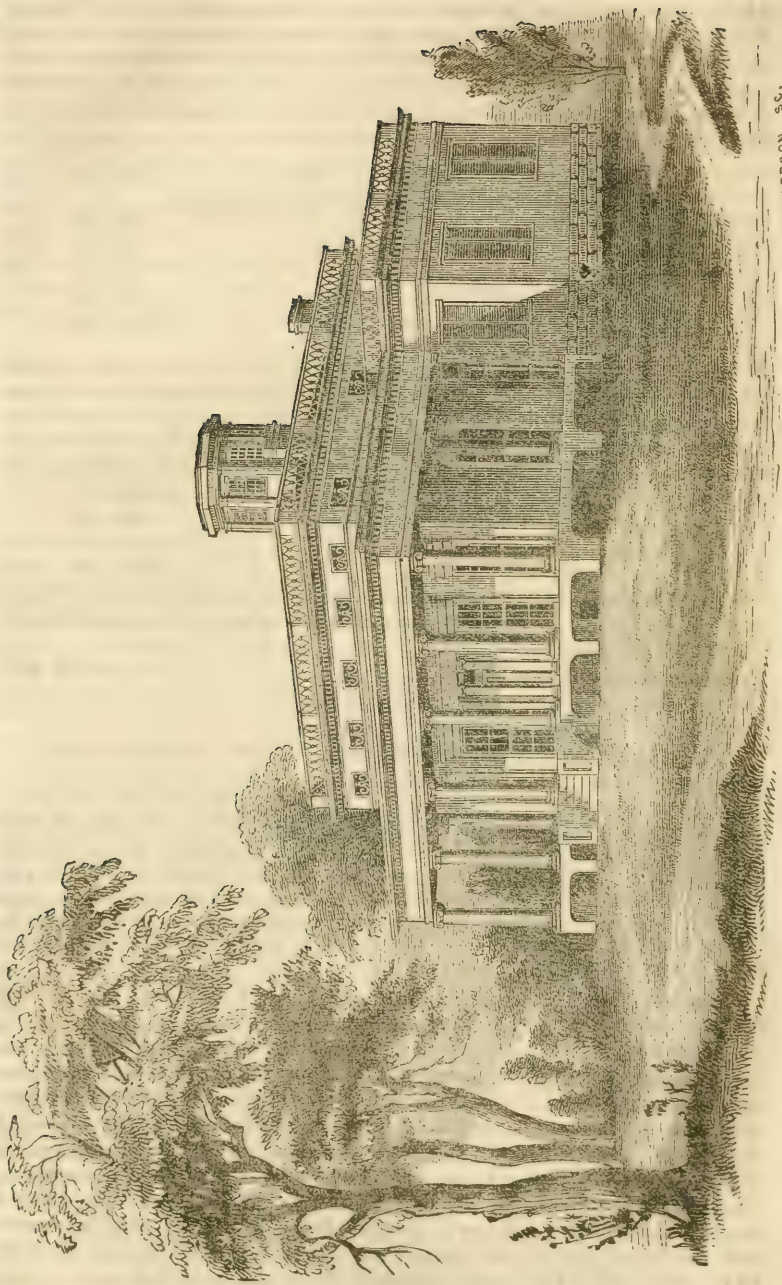
G. W. S.

EXHAUSTION CONSEQUENT UPON BRITISH FREE TRADE.

"CALCUTTA, Tuesday, Oct. 7.

"UP to the closing of business, our import market continued in the same deplorable state in which the previous mail left it, and business very nearly came to a total stand-still. The reports of sales sent in by the native brokers, who are the channels through whom alone sales and purchases of imports are effected, are supposed (small as they are) to have been exaggerated, and the few transactions which actually took place were for local consumption and prompt payment. The reports of short grain crops in various parts of the country have been confirmed, and this misfortune will be an additional adverse element in the prospects of our import trade."

SUCH is the story that comes by every mail from India, next to Ireland the favored land of British free trade. From week to week and from month to month, the markets continue in "the same deplorable state;" and for the simple reason that agriculture perishes with the disappearance of the power to combine the labors of those who drive the shuttle and strike the hammer with those of the men that guide the plough and follow the harrow. Ireland, driven to agriculture as the sole source of employment, witnesses a perpetual diminution of her power to produce food, and, notwithstanding her greatly diminished population, is now a large importer of food. India, like Ireland, has short grain crops, and her people, like those of Ireland, perish of famine and pestilence; and yet the farmers and planters of this country are daily admonished that if they would prosper, if they would have their land increase in value, they must adopt the same policy that has ruined, and is now depopulating, both Ireland and India.



COTTAGE DESIGNS, No. 1.

RICHARDSON. SC.

COTTAGE DESIGNS, NO. I.

THE engraving on the opposite page is the first of a series of Cottage Designs we propose giving in the *Plough, the Loom, and the Anvil*. They will constitute a new feature in our journal, and we have no doubt will be highly acceptable to all our readers :—

Good taste in architecture, like good taste in all other things, is the result of education, and must, of course, be progressive. The gradual advancement made by mankind in the construction of their dwellings, from the time when they lived in mud hovels up to the present, when they live in marble houses, has been very slow, but it has been sure and constantly improving. Let us not vainly imagine, therefore, that we have arrived at perfection, because our houses so much excel those which were inhabited by our grandfathers ; we are still in a transition condition, and, while we remain contented with our present improvements, we may rejoice that our children will be better housed than ourselves. But the advancement of society is not uniform ; while one man shoots far ahead in the race of improvement, another lags behind, and scarcely advances a step from the position occupied by his ancestors. Yet no individual can separate himself wholly from the rest of mankind ; he may cling with idolatrous fondness to the ways of his fathers, but he cannot wholly resist the pressure of circumstances by which he is surrounded. He may build his house to resemble in externals the forms of dead centuries, but interiorly it must conform to the times in which he lives. We build churches after mediæval patterns, but we fill them with modern conveniences. Wilton carpets and gas-lights harmonize but oddly with Gothic arches, yet we cannot sacrifice the comforts to which we have been educated to our reverence for old ceremonies. Just where Gothicism interferes with our comforts, our admiration for its forms ceases. Precisely the same rule holds good in our dwellings as in our churches ; we may imitate some of the picturesque points of old houses, but we admit nothing that interferes with our social enjoyments, and in this we are true to ourselves, and admit that we care more for present comforts than for the ways of our ancestors. The man cannot imitate the child if he would ; neither can the present imitate the past. We have been irresistibly forced forward, and so gradually that it would be difficult to mark the point where our advancement commenced, or name the precise nature of our improvement ; but we have only to look back a few years, and we see that the tide of human progress has floated us onward into regions that were unknown to our fathers. Still, as we have remarked, this advancement is very far from being uniform ; the few get ahead, and the many lag behind.

The engraving is a view of a Grecian Cottage on the banks of the Passaic river in New-Jersey, which was constructed with a design to combine all the arrangements that could be conducive to domestic convenience in a small dwelling. In style, the Grecian Doric, which is generally supposed to be adapted only to stately buildings for public uses, does not deprive it of its cottagely character, for cottages need not necessarily be rude and rustic in appearance, nor cramped in their dimensions. It is constructed in a style which beautifully harmonizes with the scene in which it is placed. It is situated in the town of Lodi, on the left bank of the Passaic river, in New-Jersey, and is constructed of wood in the Ionic order. The position of the house is elevated, and the hills at the back rise considerably above the roof, which is nearly flat. It is surrounded by fruit trees of various kinds, and the

general aspect of the building corresponds with the highly cultivated grounds in its vicinity. The main body of the house has two full stories, 11 feet and 9 feet inside. The principal floor contains a hall ten feet wide, two drawing-rooms, each 17 by 20 feet; a dining-room, and a parlor, each 17 by 16; a pantry and ante-hall, with principal stairway. In the second story there are four chambers and two bed-rooms; in the basement are a kitchen, two bed-rooms, a store-room, two pantries, dairy, cellar, scullery and fuel-room. The grounds in which this very elegant and commodious cottage is built, are laid out in a most tasteful manner, and well stocked with choice fruit trees and a great variety of ornamental shrubbery. The house fronts the south-west, and the library and breakfast-room are on the eastern side.

INFLUENCE OF THE SOLAR RAYS UPON THE VEGETABLE KINGDOM.

THE GERMINATION OF SEEDS AND THE GROWTH OF PLANTS.

THE germination of the seed and the development and growth of the plant is one of those beautiful and interesting processes of nature which, although common, is not regarded with that degree of interest and importance which should characterize the subject, and which those who are accustomed to watch closely the phenomena of nature's natural and physical laws, and the gradual and curious development of her powers of production and perpetuation, view it. In the various forms of vegetable life which we discover every where around us, we behold the elements of those which are to follow. Every species of plant, shrub, and tree, after having flourished, lived its accustomed period, perishes, and in its decay forms a soil for the germination of such plants or shrubs as succeed it in the scale of vegetable life.

If we place the minutest seed in even a few grains of earth, we find it in a very short time springing into life. Its branches are developed, its leaves unfolded, its flowers and fruit are produced, and, although a noble and majestic tree may have arisen apparently from the earth in which it stands, it will be found, on investigation, that the soil from which it grew will have suffered but very little diminution. Experiments have been made in the most satisfactory manner, and it has been proved that a very small amount only of the soluble constituents of a soil are taken up by the roots of a plant; we have then to look to other sources for the origin of the woody matter, of the acid and saccharine juices, of the gums and of the resins, yielded by the vegetable world. These are all, it will be found, formed by some mysterious modifications of a few elementary bodies, acted upon by the solar rays; and these are the phenomena which it is our business at present to examine.

Mr. Robert Hunt, Secretary of the Royal Cornwall Polytechnic Society, in a late treatise, after demonstrating that the conditions necessary to germination are moisture, a moderate temperature, and the presence of oxygen gas, remarks:—"It has already been remarked, that Michellotti proved light to be injurious to germination, and Ingenhouz and Sennebler found that seeds germinated more rapidly in the shade than in sunshine. This fact has been more recently established, beyond all doubt, by the author."

Mr. Hunt next details several experiments which were made by him with great care and accuracy, and gives the methods by which he obtained the several results. His investigations were first published in the *Philosophical Magazine* for April, 1840, and have, since that, been continued, grants having been made to the author by the British Association; and a report of the progress

of the inquiry will be found in the report of the Association for 1842. It is necessary, for a correct understanding of the results obtained, that all the conditions under which the experiments have been made should be distinctly stated.

Six boxes, he states, were so prepared that air was freely admitted to the plants within them, without permitting the passage of any light, except that which passed through the colored glasses with which they were covered.

These glasses permitted the permeation of the rays of light in the following order :—

1. A RUBY GLASS, *colored with Oxide of Gold*.—This glass permits the permeation of the ordinary red and the extreme red rays only.

2. A BROWN-RED GLASS.—The extreme red rays appear shortened ; the ordinary red ray and the orange ray pass freely, above which the spectrum is sharply cut off.

3. ORANGE GLASS.—The spectrum is shortened by the cutting off of the violet, indigo, and a considerable portion of the blue rays. The green ray is nearly absorbed in the yellow, which is considerably elongated. The whole of the least refrangible portion of the spectrum permeates this glass freely.

4. YELLOW GLASS, *somewhat Opalescent*.—This glass shortens the spectrum by cutting off the extreme red ray, and the whole of the most refrangible rays beyond the blue ray.

5. CABALT BLUE GLASS.—The spectrum obtained under this glass is perfect from the extreme limits of the most refrangible rays down to the yellow, which is wanting. The green ray is diminished, forming merely a well-defined line between the blue and the yellow rays. The orange and red rays are partially interrupted.

6. DEEP GREEN GLASS.—The spectrum is cut off below the orange and above the blue rays. Although the space on which the most luminous portion of the spectrum falls appears as large as when it is subjected to the absorptive influence of the glass, there is a great deficiency of light, and, on close examination with a powerful lens, a dark line is seen to occupy the space usually marked by the green ray.

A case was also prepared, containing five flat vessels filled with different colored fluids.

A. RED—*Solution of Carmine in Supersulphate of Ammonia*.—This gives a spectrum nearly in all respects similar to that given by the ruby glass (1) ; all the rays above a line drawn through the centre of the space occupied by the orange being cut off.

B. YELLOW—*A saturated solution of Bichromate of Potash*.—This beautifully transparent solution admits the permeation of the red and yellow rays, which are extended over the space occupied by the orange ray in the unabsorbed spectrum. The green rays are scarcely evident.

From the absorptive powers of the sulphurets of lime and potash in solution, I was very desirous of using them, but they were found to be so liable to decomposition when exposed to the sun's rays as to be quite useless for my purposes, sulphuretted hydrogen being liberated in such quantities as to burst the bottles with great violence.

C. GREEN—*Muriate of Iron and Copper*.—This medium is remarkably transparent ; the blue, green, yellow, and orange rays pass freely, all the others being absorbed.

D. BLUE—*Cupro-Sulphate of Ammonia*.—This fluid obliterates all the rays below the green ray, those above it permeating it freely.

E. WHITE.—This is merely water rendered acid by nitric acid, for the

purpose of securing its continued transparency. It should be noted that spaces in the boxes have been left open to the full influence of the light, that a fair comparison might be made between those plants growing under ordinary circumstances and the others under the dissevered rays.

It will be seen from the above that the following combinations of rays have been obtained to operate with :—

1. and A. The calorific rays well isolated.
2. A smaller portion of these rays mixed with a small amount of those having peculiar illuminating powers.
3. The central portion of the solar spectrum well defined, and all the rays of least refrangibility, thus combining the luminous and calorific rays.
4. The luminous rays mixed with a small portion of those having a calorific influence.
5. The most refrangible rays with a considerable portion of the least so, thus combining the two extremes of chemical action, and affording a good example of the influence of the calorific blended with the chemical spectrum.
6. Some portion of those rays having much illuminating power, with those in which the chemical influence is the weakest under ordinary circumstances.
- B. The luminous rays in a tolerably unmixed state.
- C. The luminous rays combined with the least active chemical ones, as in 6; but in this case the luminous rays exert their whole influence.
- D. The most refrangible or chemical rays well isolated.
- E. White light.

From these arrangements it will be evident that, although we do not secure the complete isolation of the rays, as we should do with a prism, we procure light in which the great preponderance of one influence over others suffices to insure, to a certain extent, the decided action of that one. I am well aware that we only arrive at approximations to the truth by the system adopted, but I am also unacquainted with any method by which these experiments could be tried for any time otherwise than with absorptive media.

When we look on a spectrum which has been subjected to the influence of some absorptive medium, we must not conclude, from the colored rays which we see, that we have cut off all other influences than those which are supposed to belong to those particular colors. Although a blue glass or fluid may appear to absorb all the rays except the most refrangible ones, which have usually been considered as the least calorific of the solar rays, yet it is certain that some principle has permeated the glass or fluid, which has a very decided and thermic influence, and so with regard to media of other colors.

The relative temperatures indicated by good thermometers placed behind the glasses and fluid cells which I have used, will place this in a clear light. The following results present a fair average series, and distinctly mark the relative degrees in which these media are permeable by the heating rays :—

GLASSES.

Color.	Rays not absorbed.	Temp.
1. Ruby.	Ordinary red and the extreme red, - - -	87
2. Red.	Ordinary red, and orange, portion of extreme red,	83
3. Orange.	Little blue, green yellow, orange, red, and extreme red, - - -	104
4. Yellow.	Red, orange, green, and blue, - - -	88
5. Blue.	Violet, indigo, blue, little green, and some red, -	94
6. Green.	Orange, yellow, green, and blue, - - -	74

FLUIDS.

A. Red.	Ordinary and extreme red,	-	-	-	-	78
B. Yellow.	Ordinary red and yellow,	-	-	-	-	80
C. Green.	Blue, green, yellow, orange,	-	-	-	-	69
D. Blue.	Green, blue, indigo, and trace of red,	-	-	-	-	93
E. White.	All the rays,	-	-	-	-	89

Here we see that, contrary to what we might have supposed at first, the highest temperature is not obtained behind the red media, but behind those which have a yellow or orange tint. Indeed, a higher temperature is found behind the colorless fluid than any of the others; and when we consider that the thermic influence is not confined to the red spaces of spectrum, but that it extends over all the visible rays and to a great extent below them, we see at once that a larger quantity of radiant calorific must permeate the least colored media. It will also be shown in a future chapter, that red glasses and fluids absorb a larger quantity of the heat rays than any others except black ones, and subsequently indicate a higher temperature themselves, although a lower one is observed behind them.

With these arrangements it was distinctly proved that, under the influence of the luminous and calorific rays, germination was in many cases entirely prevented, and in all the growth of the young plant was checked, and the development of leaves and buds prevented. The following results have been obtained with carefully selected roots of tulips and ranunculuses.

The first appearance of germination took place with the tulips under the orange glass (3), which was followed in three days by those under the red glass (2), then by those under the ruby glass (1), and next by those under the influence of the yellow (4), blue (5), and the green glasses (6). The roots under the orange glass developed the cotyledons a week earlier than those under the yellow, blue, and green glasses. But that the ranunculuses observed the same relative order in germinating, I should have suspected that some peculiarity in the bulbs had influenced the result, although these had been selected with the most scrupulous care. At first, the greatest progress was made by the tulips under the yellow (4) and orange glasses (3); but the leaves under each of these were by no means healthy, particularly under the yellow glass (4), which had a singularly delicate appearance, being of a very light green, and covered with a most delicate white blossom.

The leaf-stalks of the tulips shot up remarkably long, and were in both cases white; at length an exceedingly small flower-bud appeared on the plant under the orange glass (3), which perished almost as soon as it appeared, and the death of the plant immediately followed. The tulips under the yellow glass (4) never showed any buds, and their vitality soon failed them. The condition of the ranunculuses was in most respects similar to that of the tulips; they exhibited the same exuberant length of stalk, but the leaves were of a more healthful appearance. These plants, however, never showed any flower-buds, and they died nearly about the same time with the tulips.

It may be proper to mention that the garden-pots in which these roots were planted were filled with a mixture of fine earth, sand, and well-rotted manure from a hot-bed. A few days after their exposure, those under the orange and yellow glasses threw up several fungi, and continued for some days to do so, which was not the case with any of the others.

Under the ruby (1) and red glasses (2), the tulips shot up a *single lobe*, which maintained a little life for three or four weeks, but never rose more than

two inches above the soil. There was a marked redness upon this stunted formation, which I often fancied was in some respects characteristic of the kind of medium under which they were placed. The tuberous roots perished in the soil; sufficient moisture and warmth had called into action the latent principle of germination, but, being unable to maintain it against the destructive influence of the light, they rotted.

Beneath the green glass (6), the plants all of them grew slowly, but tolerably strong. They were, however, marked by a more extraordinary length of stem than those before mentioned, some of the stems of the ranunculuses being above ten inches in length, having a small leaf at the end, not more than two thirds of an inch in diameter. These plants all showed flower-buds, but none of them could be made to flower, notwithstanding the greatest care and attention was bestowed upon them; the effort of throwing up the buds appeared to exhaust their powers, and the whole of these plants soon died.

The results under the blue glass (5) were very different; the roots germinated, I think, a little less quickly than they did in the open ground, forming compact and healthy plants, developing their flower-buds strongly, and flowering in perfection.

Numerous experiments have been tried with the seeds of mignonette, many varieties of the flowering pea, the common parsley, and cresses; with all of them, the results have been similar to those already described. The seeds have germinated, in general, the most rapidly under the red glass (2), in the spring of the year; but when the heat of summer has advanced, the temperature of the red light has been too great, and germination has been prevented. Except under the blue glass, these plants have all been marked by the extraordinary length to which the stems of the cotyledons have grown, and by the *entire absence of the plumula*. No true leaves forming, the cotyledons soon perish, and the plant dies. Under the green glass (6), the process of germination has been exceedingly slow, and the plants, particularly the cresses and mignonette, have speedily died.

Under the blue glass (5) alone has the process gone on healthfully to the end; and, although I have found a few instances of a perfect plant under the yellow glass (4), it has not on any occasion yet endured to the formation of a flower. Excepting the plants under the yellow and blue glasses (4 and 5), all have been more or less etiolated.

The results in those cases where fluid media have been used, from the perfect isolation of the rays which have been thus obtained, have been much more decided. Under the influence of the light which has been subjected to the absorptive powers of the yellow fluid (B), *germination has been entirely prevented*. Under the red fluid (A), in some cases germination has commenced, but the young plant has speedily perished. Under the green (C), the plant has been developed, but in a very weak state, with pale leaves and nearly colorless stalks; but under the influence of the blue (D), the most perfect plants have been produced, and through all their stages maintained in the most luxuriant state. These experiments sufficiently prove that the process of germination is obstructed by the influence of LIGHT on the surface of the soil, although the bulbs and seeds have been buried some depth beneath it. The effects of HEAT, as exhibited by the red rays, are not, I think, to be regarded as destructive in themselves, as plants have been found to grow under the influence of these rays when they have been supplied with an extraordinary quantity of water, to supply that drawn off by continued evaporation, which has been equally rapid under the yellow media.

One very remarkable result must be noticed. Under all ordinary circum-

stances, plants bend in a very decided manner *towards the light*. In all my experiments with red fluid media, *they have as decidedly bent from it*. I do not know how to explain this as the effect of mere heat; it would appear that some property resides in the red rays, which acts in opposition to the general law. Further investigations are required on this point.

It has been stated by Dr. Draper that he has found, under the influence of the bright sun of Virginia, that plants have grown well in light which has been made to permeate a considerable thickness of an intense yellow solution. I am not certain if the germination of seeds has been effected under the same circumstances; but even if they have been made to germinate, it admits of explanation. The fervent rays of southern climes would permeate media by which the subdued rays of our latitudes would be obstructed. In proof of this, I may remark that, during the height of the splendid summer of 1842, I was myself successful in procuring the germination of a few seeds in the box (B), or under the influence of the yellow light. At the same time some very remarkable photographic results were obtained, which distinctly proved the atmosphere to have been in such a condition that a larger quantity of the sun's rays were enabled to penetrate it and reach the earth. It was also observed that the foliage of all trees was of a much darker green, and that many flowers, particularly those of a pink or pale red color, generally assumed a particular and decided blue or lilac tint.

The soil in which the plants grew was the same in each of the boxes used, but it was several times observed that, under the yellow glasses and fluids, fungi made their appearance. From the occurrence of these vegetables under the same circumstances on several occasions, I was naturally led to observe their production with greater care. I could not, with the utmost attention, make the *Agaricus muscarius* grow behind any other absorbent media than the yellow, under which it grew luxuriantly. This appears in some measure to explain the popular notion, that mushrooms and plants of that variety grow most abundantly under the influence of bright moonlight. It has never yet been found that any heat comes with the rays of the moon, and the amount of chemical action which has been detected is exceedingly small; we must therefore regard the moonbeams as consisting almost entirely of the luminous rays, the other active rays being in all probability absorbed by the moon's surface.

It is not at present in our power to explain, in any thing like a satisfactory manner, the way in which the luminous rays act in preventing germination. The changes which take place in the seed during the process have been investigated by Saussure: oxygen gas is consumed, and carbonic acid is evolved; and the volume of the latter is exactly equal to the volume of the former. The grain weighs less after germination than it did before; the loss of weight varying from one third to one fifth. This loss, of course, depends on the combination of its carbon with the oxygen absorbed, which is evolved as carbonic acid. According to Proust, malted and unmalting barley differs in the following respects:—

	Unmalting.						Malted.
Resin,	-	-	-	1	-	-	1
Gum,	-	-	-	4	-	-	15
Sugar,	-	-	-	5	-	-	15
Gluten,	-	-	-	3	-	-	1
Starch,	-	-	-	32	-	-	56
Hordein,	-	-	-	55	-	-	12

This shows that the insoluble principle hordein is, in the process of germina-

tion, converted into the soluble and nutritive principles, starch, gum, and sugar. We are therefore at present left in considerable doubt; we can only suppose that the luminous solar rays act, as indeed we find them to do on many of the argentine preparations, in preventing those chemical changes which depend upon the absorption of oxygen. A like interference has been observed by Sir John Herschel to be exerted by the extreme red rays of the spectrum; and, from the manner in which germination is impeded, in the case of the seeds covered by a deep red media (58), we may trace a somewhat similar influence.

I have endeavored, but as yet without being successful, to ascertain the real use of the cotyledon. Mrs. Ibbetson attempts to show that it is of no use for the purpose of nourishment, but that its office is merely to screen the first leaves from light and air. I am rather inclined to regard them as the lungs or gills of the young plant, in which, under the influence of the solar rays, the decomposition of air and water is effected. I shall not, however, in the present stage of the inquiry, venture on any further speculations on this matter.

THE WHITE BLACKBERRY.

THE blackberry has long been considered one of the most useful of our native fruits, and we have frequently urged upon our friends the benefits that would result from attention to its cultivation, not only in increased size and flavor, but in the introduction of new varieties; still, from the ease with which the fruit can be gathered, but few have given any attention to the subject. Our eastern horticulturists, it seems, however, have been trying their skill upon it, and, from the prices quoted for the fruit in Boston last summer, we should presume with some success. A new variety, which we have heard highly spoken of, has been brought into successful cultivation by Mr. J. S. Needham, of Danvers, Mass., which he calls the *white* blackberry, the properties and mode of culture of which he thus gives:—

"These berries differ from all others of this species, and are the only ones that have been successfully cultivated. The fruit is sweeter than the common blackberry, rich and delicious, with a fine mulberry flavor, and of good size. It is the color of the white sweetwater grape, when partly shaded, but when it grows in the open sun, it is of a darker hue.

"The bush grows from four to six feet in height, and branches out like a pine tree, (that grows in open pasture,) beginning about four inches from the ground, and every limb is loaded with fruit to its utmost capacity; the two lower sets are brought to the ground by its weight. One bush, covering a space of ground four feet in diameter, has produced eleven quarts of fine fruit this season.

"The bushes stand in an open and exposed situation, and have had no protection of any kind; they have wintered well ever since they were found, and have borne every year. It forms a succession of the small fruits, coming in just after the raspberry, about the twenty-fifth of July, and continues bearing from twenty to thirty days, and is then followed by the wild high-bush blackberry.

"SOIL.—It flourishes on soils varying from moist to dry, but the best is a rich, deep, rather moist soil. It needs liberal manuring, and good culture. Propagate by offsets, set five feet by eight, and in two years they will cover the ground; other crops may be raised in the spaces in the meantime.

"The blackberry bears on the growth of last year's canes. After the berries have been taken off, cut away at the ground all the old stems and the feeble ones, leaving two or three of the best canes. The stumps or main roots of my plants that are four years old are as large as a man's wrist. The best manure is ashes, leached or unleached, worked into the soil, and mulching is of great service to them."

TARIFF CONVENTION IN NORTHERN NEW-YORK.

Essex and Clinton counties, in northern New-York, have long been known as a valuable and extensive iron region, whose ores are of the richest kind, and yielding a metal of the best quality. The mountainous character of the country, its bold and lofty hills, and its general roughness, are natural barriers to any attempt to make this an agricultural district as the principal source of wealth to the people. A fair reward for the employment of labor and capital must, therefore, be found in some other industrial department, or these counties must be left to the partial cultivation which would wrest a limited remuneration from the soil.

The vast mineral wealth of this region could not long remain unknown and untried. Prompted by the "incidental" protection of former years, and the hope of an enlightened and discriminating policy on the part of the general government, and recently more so by the tariff act of 1842, a large amount has been invested in the production of iron. Almost from Lake Champlain, twenty-five miles up the Au Sable River, and in various parts of the two counties, extensive establishments are engaged in the manufacture of iron, and articles of iron—nails, castings, machinery, &c. Several thousand men are employed, directly or indirectly, in the iron interest, affording subsistence to about one third of the population of this region.

The operation of the tariff of 1846 has been disastrous in these counties. All interests alike are suffering. Thousands of laborers, who were formerly employed at remunerative wages, are now seeking employment. The capital of the country is depreciated about one fourth, and in every branch of industry, the prostration of business, by the fatal operation of the present tariff, is now beginning to be very severely felt.

The necessity for a revision of the present law is sufficiently demonstrated, not only here, but by the state of things in Pennsylvania, in immediate reference to this vast interest of our country, not to speak comprehensively of all others. Some measures have been deemed proper and imperative, in order to lay the matter before Congress, for the purpose of procuring an early modification of the tariff of 1846. A call having been published, inviting all persons friendly to such a measure to assemble in convention at Keeseville, Essex co., on Wednesday, Dec. 17, 1851, we made it our duty to be present and attend the meeting.

The Convention was of a high order for the intelligence and moral worth of those who composed it, as well as for the public positions now or lately held by many of the delegates. That it is a true expression of the united wishes and resolves of the people of Essex and Clinton, we have no doubt.

The Convention was called to order, at two o'clock, by Hon. James S. Whallon, when the following gentlemen were chosen officers of the Convention :—

President.—Gen. Henry H. Ross, of Essex, Essex co.

Vice-Presidents.—Hon. M. F. Haile, and Hon. Thomas Crook, of Clinton co.; Hon. Eli W. Rogers, and Charles M. Watson, Esq., of Essex co.

Secretaries.—James B. Dickinson, of Franklin co.; John S. Gould, of Essex co.; and Peter S. Palmer, of Clinton co.

The object of the Convention having been stated by the President in a brief address, on motion of James S. Whallon, of Essex co., a committee of seven was appointed to draft resolutions and report business to the Convention. The President announced as that committee the following gentlemen :—

James S. Whallon ; George A. Simmons ; J. D. Kingsland ; John Gould, jr. ; John Rogers ; Saint John ; B. L. Skinner ; and Henry G. Hewitt.

On taking the chair, the President remarked, in substance, that there could be but little difference in opinion as to the purpose and action of the Convention. There is but little difference of opinion in northern New-York on the tariff question. It is universally conceded that unless Congress should adopt the principle of protection, the interests of that part of the country would be entirely prostrated. Turn back to the organization of the government ; we see that protection was recognized as necessary to the interests of the country. It has been abandoned, and now we must declare to Congress that we know and must protect our rights and our interests. We must support only those men for office who are known to be in favor of protection.

Gen. Ross proceeded to speak of the harmony of interests, and the reciprocal benefits flowing from protection, and the injuries sustained by all interests when that principle is abandoned. He spoke of the *ad valorem* duties, and the enormous frauds perpetrated by importers, who enter their goods under fraudulent invoices, and the great injustice thus done to the government as well as to the American producer ; and urged the Convention to consider specific duties as the only rates which can satisfy the wants of American labor.

While the Business Committee were engaged in their duties,

C. F. Tabor, Esq., of Keeseville, in a brief address, remarked that he should not argue the question of protection. The theory of free trade is very attractive, and a tariff of high duties may be condemned as all wrong. In some countries, in which circumstances favor, free trade may be an advantage, but it is a plain and established fact, that where labor is worth as much as it is in this country, protection is necessary. Our labor is not as cheap—God forbid it should ever be!—as it is in other countries. Now, what is protection ? He sometimes thought that the laborers who work out our products do not understand its first principle. It is only a *measure to preserve our labor from the competition of the cheap labor of foreign lands*. A tariff bill should be called, "*A bill to protect American labor from destructive competition*." Mr. Tabor illustrated this point by a comparison of the amount of labor and raw material in a ton of iron. The cost of the manufactured iron is only the price of the labor expended in its production. Hence, if the laborer is not protected, he must either stop production or put down the price of his labor. These bloomers, miners, and colliers cannot say, "We can go to other trades." They find other trades overstocked with laborers. Farmers are interested. Their own business may be deluged by laborers. When all other pursuits fail, the laborer has recourse to agriculture ; and when agriculture fails, he must starve.

The speaker proceeded to describe the present depressed state of all the business of the northern part of New-York. The laborers who were now seeking employment, and those who would soon be discharged, are a loud witness of the urgency of immediate measures for relief, and a revival of the great interest of Essex and Clinton counties.

Several other gentlemen, Hon. Eli W. Rogers, Hon. J. H. Holt, G. W. Goff, and Wm. Oland Bourne, addressed the Convention.

The Business Committee having resumed their seats, George A. Simmons, Esq., on behalf of the committee, submitted the following Report and Resolutions :—

REPORT.

THE Committee report, that in relation to the Iron interests of Northern New-York, that portion thereof embraced in the Sixteenth Congressional District, composed of the

counties of Clinton, Essex, and Franklin, including all expenditures for both real and personal estate, purchased and employed for these purposes, consisting of Forges, Furnaces, Rolling Mills, Nail Factories, their appendages and machinery, together with the ore beds and woodlands appurtenant thereto, amount, at a moderate estimate, to three millions of dollars, the principal portion of which has been invested on the faith of the tariff acts passed prior to 1846, and has become already reduced to not more than one fourth of the original value; and must, without the revival of that protection, or some other revenue system by specific duties substantially similar and equal thereto, be totally sunk and lost. That the other interests of the same counties, including those of the operatives and workmen, as well as farmers, mechanics and merchants, immediately depending on and connected with those of the Iron Makers, are equal in amount to another three millions, which have been invested more or less on the faith of the same tariff laws, and must necessarily be depressed in about the same degree as the interests of the manufacturers themselves, under a continuance of the existing revenue system. That all the remaining interests of these counties are also more or less dependent on the Iron business, and are, and will continue to be, greatly depressed by its prostration.

That there are, in the same counties, about two hundred forge fires and six blast furnaces, which are capable of producing, and did produce in 1846 and 1847, from the ore, about fifty thousand tons of Iron per annum, including both pig and wrought Iron. That of this the forges produced about 32,000 tons yearly, worth then \$45 per ton, and amounting to \$1,440,000. That the pig Iron produced the same years was about 18,000 tons yearly, worth \$30 per ton, and amounting to \$540,000. That the yearly produce of all such Iron is constantly diminishing, amounting to only 12,000 tons of wrought Iron in 1851, worth only \$25 per ton; and of pig Iron, to only 2,500 tons, worth only \$17 per ton, and amounting in the whole to \$342,000. That of the 200 forge fires, only about 90 are now in operation, and none of the furnaces are now in blast. That about 7,000 tons of the wrought Iron is used up by the rolling mills and nail factories here, which cannot be kept in operation by Iron produced elsewhere. The schedules accompanying this report, which have been carefully made out, will fully confirm these views of your Committee.

It appears from these tables, extending from the years 1846 to 1851, inclusive, that an extensive and heretofore fairly remunerating business, employing directly and indirectly more than 5,000 men, and giving subsistence to over one third of the population of the counties of Clinton and Essex, amounting to over \$73,000, and essentially benefiting the whole in that respect, is already in a prostrate condition, and likely to be soon wholly abandoned, and the investments lost. It is certain, at the same time, that these counties possess within their limits the natural resources for the production of bloom and pig Iron of the best qualities, superior ores, water powers, and forests for fuel, besides the advantages of long experience and skill, and the use of all the modern improvements in the Iron business.

Your Committee have no doubt that the *cause* of all this present depression and threatened destruction is the abandonment and want of specific duties on imported Iron, whereby that article is brought here from Europe, and laid down on our seaboard, cheaper than we can produce it, and this by reason, principally, of the low price of labor there, to which our population should never submit. Even if the English manufacturers are *obliged* to undersell their Iron, owing to the great accumulation on their hands, occasioned by a diminished market on the European Continent, this is no reason for neglecting to guard our own manufacturers and laborers against such a calamity. Your Committee are sure they speak the sentiments of the vast majority of the inhabitants of the XVIth Congressional District, when they affirm that nothing short of a tariff of specific duties on Iron, like those in operation prior to 1846, or at least equivalent to the ad valorem duties of the present tariff at that time, will satisfy their just claims upon Congress; and without starting anew the question of *protection* as a permanent principle in the United States, until we shall have reared a domestic system of manufactures competent to our own wants, and so as to place the manufacturer beside the farmer, we stand now on other and additional reasons, invoking the faith of our government toward our own citizens, and the right of our citizens to demand at the hands of that government the preservation of such investments, and the protection of so many laborers, in comparison with which all ordinary questions which reach the ballot-box are of little importance to them.

Your Committee, therefore, recommend the adoption of the following resolutions:

Resolved, That the inhabitants of Clinton, Essex, and Franklin counties, composing the XVIth Congressional District, without distinction of party, are in favor of increasing the duties upon Imported Iron; and for that purpose it is the duty of Congress to change the present tariff from an ad valorem to a specific duty on that article, giving the same

protection that would have been obtained by the present ad valorem duty at a fair valuation when the same was imposed in 1846.

"Resolved, That we regard the ad valorem system of imposing duties as deficient in every particular, and especially so in giving the least protection when it is most required; that it has an unequal operation, and tends to great frauds on the revenue laws themselves.

"Resolved, That we are in favor of protecting fairly, and to a reasonable extent, every interest essential and necessary to the independence of the country, and especially those products for which it is possessed of every natural advantage, like that of Iron, and which, like that interest, give employment to the labor and capital of the country.

"Resolved, That, without distinction of party, we will hereafter support no man for any political office who is not in favor of such a system of specific duties as will adequately protect the labor and capital of the country, and who will not truly and efficiently represent our interests upon these questions; and that we will make this question paramount to all other state and national questions, and will persevere in our efforts until adequate protection is afforded to the industrial interests of the country.

"Resolved, That a Corresponding Committee be appointed, to consist of seven members, composed of Ed. Kingsland, C. D. Barton, John Rogers, W. S. Merriam, Henry Hewitt, Peter S. Palmer, and Henry N. Gould, to correspond with any other citizens or conventions, in relation to the objects of this meeting, especially with the other Iron districts of this State, and in other States, and with power to call future meetings in this Congressional District, if they deem it necessary.

"Resolved, That a Financial Committee be appointed, to consist of seven persons, with power to appoint sub-committees, if they deem it necessary, to raise funds to carry the object of this meeting into effect, and that the Committee consist of C. D. Barton, George W. Goff, and Henry H. Ross, 2d, of Essex county; James Rogers, Lawrence Myers, and Wallace Hartwell, of Clinton county; and James B. Dickinson and Samuel C. Weed, of Franklin county; and that the sum of six hundred dollars be raised by the 15th of January next.

"Resolved, That three delegates, James S. Whallon, C. F. Tabor, and Sidney Lawrence, one from each county, be sent to Washington, to represent the views of this Congressional District to Congress, and to procure the requisite modification of the Tariff Law." [Hon. Mr. Tomlinson was subsequently added to this delegation.]

TABLE A.

Rolling Mills and Nail Factories in Essex and Clinton Counties, New-York.

LOCATION.	No. of Rolling Mills with Nail Factories attached.	No. of Heating Furnaces and Rolling Mills.	No. of Nail Machines.	No. of Men Employed.	No. of Tons of Iron used.	No. of Kegs of Nails produced.	No. of Tons Rolled Iron produced.	Price of Nails per Keg.	Average Price of Rolled Iron per Ton.	Whole Value of Nails Manufactured.	Whole Value of Rolled Iron Manufactured.	Cost of Nails per Keg.	Cost of Rolled Iron per Ton.
Keeseville, Clinton Co., N. Y.....	1	4	55										
Clintonville, Clinton Co., N. Y.....	1	4	40										
Ausable Forks, Essex Co., N. Y....	1	2	30										
Essex, Essex Co., N. Y.....	1	2	20										
	4	12	145										
1846.....				280	8,000	120,000	2,000	\$4 00	\$80 00	\$480,000	\$160,000	\$3 75	\$75 00
1847.....				325	9,000	130,000	2,500	4 25	85 00	552,500	212,500	3 75	75 00
1848.....				322	9,000	130,000	2,500	4 00	80 00	520,000	200,000	3 75	75 00
1849.....				350	10,000	140,000	3,000	3 75	75 00	525,000	225,000	3 50	70 00
1850.....				350	10,000	140,000	3,000	3 75	70 00	455,000	210,000	3 25	65 00
1851.....				250	7,000	90,000	2,500	3 00	65 00	270,000	162,500	3 00	60 00

Price of Nails, December, 1851.....\$2 75

E. & J. D. KINGSLAND & COMPANY.

Keeseville, Dec. 17, 1851.

TABLE B.

Showing the Manufacture and Value, &c., of PIG IRON, in Essex and Clinton Counties, New-York, from 1846 to 1851, inclusive.

YEAR.	Number of Furnaces.	No. of Furnaces in Blast.	Number of Tons Capable of Producing.	Number of Tons Actually Produced.	Number of Bushels Charcoal used.	No. of Tons of Ore used.	Total Value of Pig Iron.	No. of Men Employed, including Colliers & Miners.	Price per 100 Bushels Charcoal, at Works.	Price for 1 Ton of Ore, at Works.	Actual Cost per Ton of Pig Iron, at Works.	Market Price per Ton of Pig Iron, at Works.
1846.....	6	6	18,000	16,000	2,550,000	30,000	\$416,000	1,200	\$6 00	\$1 75	\$22 00	\$26 00
1847.....	6	6	18,000	16,000	2,550,000	30,000	416,000	1,200	6 00	1 75	22 00	26 00
1848.....	6	2	18,000	5,000	750,000	7,500	115,000	400	6 00	1 50	20 00	23 00
1849.....	6	1	18,000	3,000	450,000	4,500	60,000	300	5 50	1 50	18 00	20 00
1850.....	6	1	18,000	3,000	450,000	4,500	51,000	300	5 50	1 50	18 00	17 00
1851.....	11	year	18,000	1,200	180,000	2,100	20,000	150	5 00	1 50	18 00	17 00

TABLE C.

Forges in Essex and Clinton Counties, New-York.

Year.	Blooming Forges.	Forge Fires.	Tons Bloom Iron Capable of Producing.	Fires in Operation.	Tons Iron Produced.	Bushels Charcoal consumed.	Price Charcoal per 100 Bushels.	Tons Ore used.	Price of Ore per Ton, at Forges.	Cost of Iron per Ton.	Worth of Iron per Ton.	Total Cost of Iron Produced.	Total Value of Iron Produced.	Bloomers' Wages for Making Iron, per Ton.	No. of Men Employed in Forges.	Whole Number Men Employed in Making Iron & Coal & Mining Ore.
1846.....	48	140	25,000	125	25,000	6,250,000	\$6 00	62,500	\$6 00	\$38	\$45	\$950,000	\$1,125,000	\$8	1,000	2,500
1847.....	50	150	30,000	150	30,000	7,500,000	6 00	75,000	6 00	38	45	1,140,000	1,350,000	8	1,200	3,000
1848.....	58	190	32,000	160	32,000	7,000,000	6 00	80,000	6 00	35	40	1,120,000	1,128,000	7	1,280	3,200
1849.....	60	200	35,000	150	30,000	7,500,000	5 50	75,000	5 50	33	35	990,000	1,050,000	6	1,500	3,000
1850.....	60	200	35,000	100	20,000	5,000,000	5 50	50,000	5 50	32	30	640,000	660,000	6	800	2,000
1851.....	60	200	35,000	60	12,000	3,000,000	5 00	30,000	5 00	30	25	360,000	300,000	5	480	1,200

There are now only about 40 fires in operation, 30 of which will stop about the 1st of January next.

Dec. 17, 1851.

E. & J. D. KINGSLAND & Co.

We hope the action of the Convention will be followed by corresponding action in other counties and States, and that it will result in a revision of our tariff, such as is demanded by the interests of the American laborer. We commend the above report and tables to the attentive examination of every reader.

B.

RESULT OF MAKING A MARKET ON THE LAND FOR ITS PRODUCTS.

THE NEW-ENGLAND FARM-HOUSE.—There is an improvement in rural architecture, a care for the comfort of animals, some solicitude about planting trees and repairing fences, and a laudable desire to do well and look well has become general. We have found out that it is as easy and economical to erect a habitation with some pretension to elegance, as to disfigure the side of the highway with a pine box, an ugly lump of clapboards and shingles. We begin to think it is not profitable or becoming to allow the worm to spin his web in our apple-trees till the orchard looks like the ruins of a wasting conflagration. The practice is growing less frequent of suffering our cattle to carry about them a proportion of the barn-yard, solidly caked on for a winter overcoat, while, in regard to such remnant of the hide as is visible, a course of exposure and low diet, like the tale that Hamlet's father could have told, causes "each particular hair to stand on end." It has

also been discovered that, however appropriate the fur of the beaver may be for the head, it has a marked incongruity when protruding through a broken window. This peculiarity of our landscape might once have elicited some expression of surprise at the unusual number of hatters' shops, were it not corrected by the conviction, that no sane mechanic would ever exhibit such specimens of his handicraft. On the whole, we have arrived at the rather reasonable conclusion, that trees, like other things, require some attention after being planted; that cleanliness is about as essential to animals as good food, and that the fashion of glazing with old hats goes out with the rum-bottle.

SELECTION OF SEEDS.

CHOICE OF SEEDS.

WHEN seeds swim on the surface of the water, it is an infallible sign that they are improper for vegetation; but still this vegetative proof is not sufficient to assure us that those which stand this proof are good, for they may notwithstanding be partly or wholly bad. To avoid all doubt, recourse is had to the following method: Put a small piece of cotton in a tub of water; put seeds in it, and place it in a proper exposure at the temperature of 20 to 25 degrees Fahrenheit.

The good seeds will soon germinate. This is always done by careful cultivators of the madder, the seeds of which are sometimes dear, and do not grow when old. One ought carefully to avoid seeds mixed with others—great cleanliness of seeds is important. And all this care does not secure us from bad seeds, because we know that vegetable maladies are sometimes transmitted through the seeds, as, for instance, the *corn charcoal*—the *Uredo Carbo*—a parasite plant which attacks the seed, alters its principles, and transforms it into a blackish powder; and a few grains of that powder escaping from a diseased plant is sufficient to infect others which are sound. The preventives of this malady are difficult, for the contact of diseased seeds with sound ones is infectious.

There are many opinions as to the quality of seeds. Must we choose the largest or the smallest? The ancients, Varro, Columella, and Pliny, advise as to grain, (the Cerealia,) to *select the heaviest*. By this they meant those seeds which are individually so, and not such as weigh most in certain quantities. Mons. Loiseleur Deslongchamps has shown that a hundred grains of the *Leisette* (a kind of wheat) of Provence, weighs 4 grammes 7.100, while the same *Leisette* cultivated near Paris weighs 7 grammes 74.100. We know that the weight of the hectolitre of this grain, in Provence, is from 78 to 82 kilogrammes, while that grown near Paris weighs but 76 to 78 do. Therefore the hectolitre of *Leisette* raised near Paris, contains 1,101,000 grains, and that of Provence 1,701,080 grains.

We avoid, reasonably, all wrinkled or shrivelled grains, for that announces that they are not well filled with flour. We admit none but well-filled grains, even if such be small. And do we then obtain as large straw and heads? Duhamel has affirmed that from small acorns and chestnuts we have as fine and as large trees as from the largest. He has shown that the size of trees of various kinds has no relation to the size of their fruit. He recommends only that the small acorns be gathered from the finest and largest trees during their middle age. Mons. Loiseleur Deslongchamps has put it out of all doubt that the choice of the largest seeds is of no importance for planting.

On the duration of the germinating power in seeds.—The strange discord prevailing on this subject, proves how little this matter has been studied. We

know, generally, that the seeds of leguminous plants have a very prolonged vitality. Mons. Girardin grew beans which had been preserved by Mons. Tournefort, after one hundred years had elapsed. We have cited an example from Thaer, who found under an old building earth which, being carried into his garden, produced *Golden Margarets*, which had never been seen in that vicinity. A great number of examples similar to this prove that the vitality of seeds does endure for a great number of years. On the other hand, nuts—hazel-nuts, almonds—hardly germinate after the first year. There are very few seeds of madder of the second year which will germinate. Wheat has been the subject of the greatest research in this respect. Pliny assures us that he had seen wheat germinate, which had been kept a hundred years. Howe speaks of barley germinating after having been kept one hundred and forty years. According to my observation, however, we rationally prefer planting seeds of the previous year. It is essential to keep seed-wheat spread so that it may be well aired, and to have fresh seed.

PLANTING OF WHEAT.

Mons. Moreau, of the North, formed 13 beds, each of which was planted with 150 grains at different depths, and the following table shows the results :

Depth.	Those which came up.	Heads.	Number of grains gathered.
7 inches	5	53	682
6 " and $\frac{1}{2}$	14	140	2,520
5 " " $\frac{3}{4}$	20	174	3,818
4 " " $\frac{1}{2}$	40	400	8,000
4 " " $\frac{1}{4}$	72	700	16,560
3 " " $\frac{3}{8}$	93	992	18,534
2 " " $3\frac{1}{2}$	123	1,417	35,434
2 " " $\frac{1}{2}$	130	1,560	34,349
2 " " "	140	1,590	36,480
1 " " $\frac{3}{4}$	142	1,660	35,825
1 " " "	137	1,461	35,072
$\frac{1}{2}$ " "	64	529	10,587
On the surface	20	107	1,600

THE FUTURE OF SOUTH CAROLINA AND OF THE SOUTH.

THE *Greenville Patriot* predicts for the future of South Carolina as follows :—

"We now predict that a new era has commenced in this State, and that the energies of her people will no longer be exhausted in a fruitless excitement and war with the Federal Government. Instead of boasting of our chivalry and spirit, and spending our time in idleness and profligacy, we will go to work and improve, enrich, and beautify our Palmetto State. We will build railroads, cut canals make plank roads, erect machinery, put up manufactories, improve our lands, construct magnificent public edifices, fine houses, and comfortable dwellings. We will endow schools and colleges, and look to the moral and social condition of our people, and make ourselves, not an independent nation, but an independent *people*. We will show our love for South Carolina, not by running off to some new country, but by living and dying here, and teaching our children to remain here after we are dead and gone. Instead of going to the North to spend our money and our summers, we will visit the mountains of our own beloved State, and build cottages there, and live there during the hot and sickly season. We will learn to manufacture and import our own goods, and raise our own horses and hogs, so that we may be neither dependent on the North or the West."

South Carolina will, we are here informed, make a market on the land for the products of her land ; but why is it that such a work has so long been

deferred? Why is it that she is now almost to commence the work of building railroads, making plank-roads, erecting machinery, and putting up manufactories? Why is it that such things have not long since been done? The answer is simple. South Carolina has refused to accept for her citizens that protection against the monopoly power of Great Britain, without which the spindle and the loom can never be brought to take their place by the side of the plough and the harrow. She has advocated the Manchester system of political economy, which teaches that the way to enrich the farmer and the planter is to send from the land all the products of the land, first exhausting the soil, and then exhausting its owner, preparatory to "running off to some new country;" whereas, had she continued to believe with her Rutledges and her other men of the Revolution, that agriculture and manufactures must go together, she would have been steadily improving her soil, endowing schools and colleges, looking to the moral and social condition of her people, and teaching them "to show their love" for their native State by living and dying there, and teaching their children to remain there after they were "dead and gone;" and all these things she would have done, because she would every day have been more and more proving the truth of the theory, that *it is population that makes the food come from the rich soils, while depopulation drives men back to the poorer ones.* Truth is mighty, and it will prevail.

HENRY C. CAREY AND HIS WRITINGS.*

[WITH A PORTRAIT.]

THE science of Political Economy has never been properly understood. Indeed, we cannot see how any system of political economy could ever have been constructed, which, starting from the initial truth, whatever that might be, should follow out the vast and complex relations of man as a social being, and, boldly asserting its several propositions, should be completed by an application of profound philosophical principles to the higher, not less than the lower interests of nations. We say that we see not how any such system, which should embrace the broadest and most important absolute truths, could have been constructed; for the reason that the students and the teachers of political science have never been so independent of external influences as to leave them free to the higher and clearer perception of truths which a new age and a new social destiny could alone develop. As long as the central idea of any state is the perpetuation of the royal lineage, and the crown, and the splendor of the government, and the prerogatives of the nobility, and the usurpations of the aristocracy, to which all other ideas must be made to converge, (any other idea, in fact, being proscribed, and its author speedily appropriated to the guillotine, the halter, or the wheel,) just so long will the external circumstances of society, regulated and forcibly moulded by this absolutism, demand a system apparently philosophical, plausibly scientific, which shall accommodate truth to their own development and adjustment.

We assume nothing, and arrogate nothing, in this opinion. Philosophical systems, invented to accommodate themselves to political institutions, which,

* A number of our subscribers having called for a portrait and sketch of Henry C. Carey and his writings on Political Economy, we comply with the request in this number of our Journal. We have good precedent for introducing "Our Contributors" to our readers, though we do not desire to do so, except when such a step is justified by the requests of our friends.

in their inception, their continuance, and their operations, are violations of Nature's perfect laws, and therefore wrong; systems invented to teach maxims which tend to the limiting of good to the few, and the distribution of burdens and pains among the many; systems which proceed on the assumption that war, disease, crime, insurrections, and the like, are Nature's escape-pipes to let off the pressure of society, and other doctrines as monstrous as they are cruel, and as superficial as they are weak,—systems like these could never be true. With much of close observation, with much of truth obscured by error, with much of earnest reaching after the greatest good, the political economies of the past are defective, erroneous, false.

There is, however, this redeeming feature. The systems invented are measurably well adapted to the political institutions they are intended to support, and the interests they are intended to develop. But these institutions are all founded upon the "divine right of kings," and the legitimacy of the few, they being aggrandized to the fulness of a dazzling splendor, while the many are restricted, bound up, trammelled, and slain, at the will of the usurpers! This construction of society is false and unnatural, yet we are told by its apologists that it is imperatively demanded by the moral and intellectual condition of the people. When, however, we come to inquire into the past, we find that that condition is the result of perpetual wars, involving heavy taxation for the support of fleets and armies, and preventing the accumulation by its people of the means of physical, moral, and intellectual improvement, while the few who govern them are still further enriched by the very causes which oppress the many. The whole tendency of European political economy is to teach that the existing inequalities of condition are the results of laws established by an all-wise, all-powerful, and all-merciful Being. *War and waste* give power to the few, and helplessness to the many. The few are, therefore, always ready for war, while the many, among whom peace diffuses prosperity and happiness, are always the friends of peace. In a state of peace, the people are freest. Norway, the freest government in Europe, is that in which the people are the most peaceful, and the most capable of asserting their rights, and the best prepared for self-government. It is where armies are largest and most frequently used, the taxes are heaviest, and the people poorest and weakest, that the inequality of condition has its most earnest supporters as a result of divine laws; and to account for the existing facts, it is necessary to resort to the theories of Ricardo and Malthus, which aim to show that the inability to obtain food, or clothing, or education, results from a principle of population. Let the many be inspired by hope, enjoyed under free institutions, and the advocates of false constructions and despotic systems will learn that they are sufficiently capable of self-government, and that a people whose moral and intellectual condition is elevated, will be not less distinguished for their social position—their entire capacity for self-government, or political and individual freedom, being speedily demonstrated. The nearer a state comes to this condition of moral and intellectual greatness and consequent equality of privileges, which constitutes freedom, the nearer it approaches TRUTH in its social mechanism and political institutions; and hence, any system of political science which develops most profoundly and clearly these principles, is obviously the nearest to absolute Truth. It requires no argument or illustration to show that philosophical maxims and theories, adapted to the former false conditions, are altogether unfit and useless, when applied to the latter condition, which is TRUTH, tangible and actual, in life and embodiment. The reasoning of the ancient philosophers, in regard to the four elements, fire, air, earth and water, in the degree of knowledge to which they had then attained, was

sufficient to carry them over many difficulties, but would be mere stupidity and positive ignorance, applied to our present advanced state of chemical philosophy. So in political economy. The progress of the world develops new circumstances, points to new truths, and quickens new investigations. The circumstances are not, indeed, so new as are the coincidences under which they come to us, and the truths are only old truths which false systems and institutions had buried and obscured. We want, then, a new and truer system of political philosophy than we can get from the past.

The Declaration of Independence, the Revolutionary War, the Constitution of the United States, and of the several States, embodied a class of truths, and made those practical and demonstrable, which had been only the abstractions and dreams of hopeful leaders of other times. The American Union has pressed onward with unparalleled rapidity in its path to wealth, extent of territory, population, productiveness, grandeur, and power; and the institutions of the country are, almost without an exception, eminently calculated to produce the present state of things in our land. What, then, is the central idea of our institutions? FREEDOM. Freedom is the position nearest to absolute truth in the social and moral relations of man; it is the true condition of a moral being. The principles and maxims of political science which have heretofore been taught, are found to be faulty, erroneous, defective, and often false. They belong to the past, to false and unnatural conditions of man,—conditions growing out of wrongs suffered, and injustice endured, and rights invaded,—and hence, they are not fitted to the genial, hopeful, progressive institutions of Freedom of to-day. How much less are they suited to the brighter fulness of to-morrow!

America having thus given birth to institutions unparalleled in the history of the world, and presenting a spectacle of national grandeur which is every hour swelling into more gigantic proportions against the western sky, it is natural that the principles and the laws which govern this development should come to be profoundly examined, and constructed into a system of political economy more in harmony with the truths which are the goal whither our institutions and destiny lead us, as well as the very basis upon which they rest. To denominate this system the "American School of Political Economy," is only to obey an instinctive impulse; and to give to its founder a high place among the most able and profound thinkers of the age, is to award what cannot be withheld. This position belongs to the gentleman whose name we have thus attempted to introduce to the reader.

HENRY C. CAREY was born in Philadelphia, Pa., in the month of December, 1793, and is, therefore 58 years of age. His father was the late eminent MATTHEW CAREY, of that city, whose name and whose virtues are embalmed in delightful and honored memories, in connection with the free and benevolent institutions and enterprises of his day. He was an able and practical writer, and his frequent contributions to the economical discussions of his time were important to the principles he advocated as a warm and faithful writer on the side of protection to our national industry. The senior Carey was a practical business man, for many years well known in the book-trade, and gave to his children a business education.

HENRY C., the third child, and the oldest son, formed no exception to this wise economy of the parent. At seven years of age he entered the book-store of his father, and there remained until he was twenty-one, when he became associated with him in business. On the retirement of his father, in 1821, when he was twenty-eight years of age, he became head of the firm of Carey & Lea, and afterwards of Carey, Lea & Carey. During this time he formed

a matrimonial alliance with a sister of Leslie, the painter. The practical and important truths to which Mr. Carey's mind had from time to time been drawn, during this and the former period of his life, determined him to investigate fully the various systems of political economy which had been proposed by former and contemporaneous writers; and on his retirement from business, he devoted the energies of an independent, acute, and philosophical mind to the vast field of the multifarious interests of man, considered in their broadest, deepest, and highest relations.

The first volume from Mr. Carey's pen was published in 1835, and is entitled, "*ESSAY ON THE RATE OF WAGES; With an Examination of the Causes of the Differences in the Condition of the Laboring Population throughout the World.*" This work, which is but an index of the patient and persevering spirit of fearless investigation and bold grappling with the principles announced by his predecessors, which mark Mr. Carey's works, was soon afterwards expanded into and followed by "*THE PRINCIPLES OF POLITICAL ECONOMY,*" which appeared in three parts, each forming an octavo volume, in the years 1837, 1838, and 1840. Part I. is devoted to "The Laws of the Production and Distribution of Wealth." Part II. discusses "The Causes which retard Increase in the Production of Wealth, and Improvement in the Physical and Moral Condition of Man." Part III. treats of "The Causes which retard Increase in the Numbers of Mankind." Part IV., contained in the same volume, is devoted to an examination of "The Causes which retard Improvement in the Political Condition of Man."

Contemporaneous with the publication of these "*Principles of Political Economy,*" we may notice here an essay on "*THE CREDIT SYSTEM IN FRANCE, GREAT BRITAIN, AND THE UNITED STATES,*" published in 1838, an octavo of some 130 pages, and "*ANSWERS TO THE QUESTIONS: WHAT CONSTITUTES CURRENCY? WHAT ARE THE CAUSES OF UNSTEADINESS IN THE CURRENCY? AND WHAT IS THE REMEDY?*" which latter bears the date of 1840.

Here the publications of our author rested for several years. But the ripened fruits of this period of seven years' study and labor were not long withheld from the public. In 1848, the thinkers and economists of the old, as well as the new world, were surprised with one of the most able and elegant, and at the same time broad and masterly productions of our day. It is in Political Science, what the great work of John Stuart Mill is in Metaphysics—original, thorough, and profound, the casket thrown far in advance which shall lead on the forces of progress to a more speedy conquest over their adversaries. "*THE PAST, THE PRESENT, AND THE FUTURE,*" will stand as one of the remarkable books of our time. It was while developing the theory of Rent, as presented in this volume, that Mr. Carey became convinced that Protection is a measure of resistance to a system of oppression, a doctrine which immediately absorbed his whole attention, and the result of his labors was the work which next came from his pen. In the "*HARMONY OF INTERESTS,*" the author devotes himself to a full examination of the laws which govern production and consumption, and the effect of protection in increasing capital, production, exchanges, and the reward of labor. He enters into a commercial history of our country for thirty years; past and under the various tariffs and changes which the tariff has undergone, he presents a mass of facts which demonstrate clearly the necessity and beneficent results of a protective policy. If we may attempt a brief statement of the author's views, they may be thus expressed: A protective tariff increases production and consumption, the demands for and the means of transportation, both internal and external, and accelerates the immigration of laborers from abroad; shipping grows with pro-

tection, because protection causes demand for labor ; the laborer must be imported ; and men being, so to speak, the most valuable commodity, the cost of sending the less valuable to market is diminished ; in other words, the producer and consumer being placed side by side, each has a better reward for his labor, because the cost of transportation to market becomes greatly reduced. Or, as the author himself observes : " Between the interests of the treasury and the people ; the farmer, planter, manufacturer, and merchant ; the great and little trader and the ship-owner ; the slave and his master ; the land-owners and laborers of the Union and the world ; the free trader and the advocate of protection, there is perfect harmony of interests ; and the way to the establishment of universal peace and universal free trade is to be found in the adoption of measures tending to the destruction of the monopoly of machinery, and the location of the loom and the anvil in the vicinity of the plough and the harrow."

We have not attempted, in this brief statement of Mr. Carey's labors, to furnish a review of his facts or his principles. We have not designed to undertake such a task. In briefly announcing the various productions of our author, we aim to make our readers better acquainted with the labors of one whom we are privileged to number among the contributors to "The Plough, the Loom, and the Anvil." The fame of these labors is not confined to our own country. In Europe, Mr. Carey's works are ranked among the richest and most valuable acquisitions which political science can boast ; and the appropriations made from them by foreign writers show the power of his reasoning and his facts in gaining pupils from among the leading minds in Europe. The use made of Mr. Carey's publications in European schools, and the fact of a translation having been made into Swedish, where they are the text-books of the Royal University, and that they are about to be rendered into French, is a proud triumph, and entitles the author to the distinction which has been accorded him : "*The Apostle of the American School of Political Economy.*"

We cannot close without noticing that special feature of Mr. Carey's system which is so marked throughout his pages. In it is the justification of the principles with which we commenced this sketch. Mr. Carey is eminently a man of PEACE. Having ever viewed FREEDOM as the true condition of a moral being, whatever tends to make him the subject of external and unnatural restrictions, we regard as antagonistic to his true and highest interests. WAR, whatever be the pretext, aims to restrict or to destroy entirely the freedom of one of the belligerent parties. War disturbs the operation of those great laws which give permanence, prosperity, and consequent happiness to a nation. It disturbs, embarrasses, and checks or suspends production, and, inevitably, exchanges and commerce. It is, therefore, a death-blow to the capacity of the people to improve their condition. It creates debt. Debt creates taxation. Taxation depresses production by the burdens it imposes upon the laborer and producer ; and in the measure in which production is depressed and wronged, centralization throws the wealth of a nation into the hands of a minority ; for the greater the restriction on the producer, the less is his power to resist the tendency to centralization ; and hence he becomes a mere half-paid or worse oppressed machine, by which nobles and nabobs, princes or patroons may cause him, in hopeless endurance, to

"Bleed gold for ministers to sport away!"

There is scarcely a nation in Europe which does not present this picture at the present time—certainly no nation which holds a position of any influence in the affairs of the world. Hence, we think our position as a nation is a new

one in the world's history. Having asserted our freedom, and paid off the debt created in its purchase, we have pursued a path which has led us to unrivaled prosperity. The war of 1812 was occasioned by an attempt to restrict our freedom. The evils growing out of that war were many, and the perturbations and restrictions were universally felt; but they were overcome, and the debt created was paid. The first bold violation of our constitutional law of PEACE was the war of Texas-annexation and Mexican dismemberment,—the first imitation of that policy which has characterized the nations of the old world. The consequences of that disturbance of our economy would have been immeasurably more disastrous than they were, but for the discovery of gold just after the partition of Mexico, and the acquisition of an immense territory. A system of Political Economy, therefore, which arranges and demonstrates the principles of the science on this truer basis of FREEDOM, and of PEACE, which is its consequent, is demanded by the spirit of our institutions and the wants of our age. Old systems, formed from the bloody materials of the past, the debris of violent convulsions, and the exuviae of the mediæval night, relieved by the first impulses of a struggle for a better day, are not the basis upon which the future or even the present statesmen of America should erect their institutions.

In the "Essay on the Rate of Wages," Mr. Carey uses the following language:

"Had the laws which govern the rate of wages, and the effect of the various disturbing causes which prevent the action of those laws, been properly understood, wars could never have been popular. Mr. McCulloch says with great truth, that 'the laborers are masters of their own fortunes, and that there is little reason to hope for any great improvement until they shall be made to understand correctly the laws which govern the rate of wages, and the fact that it rests with them to determine what that rate shall be. Had they understood them, they would have seen that a state of peace was that in which they must prosper most, and would have been indisposed to join in a pursuit that might bring them 'glory,' but that would inevitably deprive them of a part of their bread and meat. Had they been understood by those who are in 'high places,' and upon whom rested the cares of government, they would have seen that the prosperity and happiness of the people, in which would consist their own true glory, were not to be promoted by empty triumphs, nor by the addition of barren islands to their already extensive possessions. They would have seen that peace alone could do it; and had they done so, they might perhaps have retained the same intimate connection with this country that once existed, with an intercourse unfettered by corn laws on the one side, or the system of minimums on the other; and the people of Great Britain, instead of groaning under the pressure of taxation for the support of the government, the land-owners, paupers, and monopolists, might now be the happiest and freest from taxation of any nation in the world. It is, indeed, impossible to imagine the height of prosperity which she might have attained, had she kept aloof from the intrigues and contentions of the Continent during the last century, as she might well have done; and had the thousands of millions expended in paying men for carrying muskets been left in the hands of their owners, to be applied as they might judge most likely to conduce to their comfort and advantage. Unfortunately, however, the triumphs of peace are little valued; and Sir Robert Walpole, who could maintain a peace for twenty years, is little thought of when compared with the elder Pitt, whose first wish was for extended territory, and who is best known for carrying the nation triumphantly through a war; and the names of Alexander and of Cæsar are familiar to thousands who never heard of Antoninus, or of Marcus Aurelius."

"THE PAST, THE PRESENT, AND THE FUTURE," is radiant with this beautiful and holy philosophy. In a subordinate heading it is called "THE LESSON OF THE PAST TO THE PRESENT;" and we will here close with a few of the inculcations of this new and lovelier reading of the political science of our age.

"THE PAST says to the sovereign of the PRESENT: 'Avoid war! It diminishes population and wealth and union, and it tends to reduce nations into tribes.

Its apparent grandeur is real littleness. It destroys the power of self-protection, in which consists real greatness.'

"To the representatives of land it says: 'Avoid war! It destroys population and wealth and the value of land is dependent upon the growth of both.'

"To the laborer it says 'Avoid war! It destroys wealth more rapidly than population. It diminishes your power over the product of your labor, and it tends to increase the existing inequality of condition.'"—*Man and Food*, p. 93.

"The PAST says to the landlord of the PRESENT: 'If you desire that your lands become valuable, yielding large rents, labor to promote the maintenance of peace.'

"To the tenant it says: 'If you desire to become the owner of the land you cultivate, labor to promote the maintenance of peace, and to prevent the waste of wealth in fleets and armies.'

"To the laborer it says: 'If you desire to own your house, and lot, and garden, your own shop, or your own farm; to have your own wife and children; to read your own books and newspapers; to go to your own church; to send your children to your own school; and to see them prosper in an active world, where rapidly increasing wealth gives increased wages to a rapidly increasing population, labor to promote the maintenance of peace and economy.'

"To the nation: 'If you desire to acquire, individually and collectively, the power of perfect self-protection, avoid war and preparation for war.'"—*Wealth and Land*, p. 156.

In the close of the eighth chapter, in which "*Man and his Helpmate*" are considered, the following are given as the "Lessons." May they soon become the universally taught and received principles in every land!

"The PAST says to the sovereign of the PRESENT: 'If you desire that woman should occupy the position for which she was intended by her Creator, cultivate peace.'

"To the landlord it says: 'If you desire that your lands shall become valuable, avoid war, and permit wealth to increase, that woman may be chaste, and population grow.'

"To the laborer it says: 'If you desire that the honor of your wife and daughter be respected, labor to promote the maintenance of peace.'

"To woman it says: 'If you would be a happy wife, mistress of your own home, and surrounded by your children, love those who cultivate peace.' "

Let the maxims of HENRY C. CAREY be taught in our high schools and in our common schools, in colleges and universities, from the platform and by the press, and the beneficent and immeasurable results of such teachings will be seen in a progress the world has never witnessed, and a destiny of which poetry could never dream. Expressed in one sentence, we may learn that while sin is a reproach to any people, the exaltation of a nation is "RIGHTEOUSNESS."

W. O. B.

RESULT OF EXHAUSTING THE LAND.

THE PASSION FOR CITY LIFE.—Another cause, operating against the farm, is the supposed superior respectability and emolument of other pursuits, acting as a continual drain on our agricultural population. The young man, toiling in homespun, sighs for the joys of broadcloth and fine linen; and his visions of earthly bliss bring before him, not the green fields, with trees, and flowers, and the singing of birds, and the murmur of bees, and running brooks, and all the beautiful sights and sounds of his daily life; but his imagination dwells on paved streets, and brick walls, and muddy streams of gutters, and

the rattle and din where men herd and jostle one another. His beau ideal of life is to pass it in a dingy office, where the blessed sun never enters; to "achieve greatness" in the foul air of a court-room; to feel a consciousness of importance and patronage where humble greetings and the lowly reverence of obsequious money-dealers tell who is noted on "Change." He thinks of the opulent city, and numbers up those whose ability or wealth has built them up a name, and originated many a fable for country circulation, stirring up young ambition to shake off, not the dust of the farm only, but the shoes themselves; to jump from caterpillar to butterfly, without any intervening chrysalis; to enter into that state of beatitude which erects a standard of gentility on the disdained or forgotten occupations of early life.

The above passages are extracted from an address before the Norfolk Agricultural Society, by George R. Russell, to which we shall again call the attention of our readers; and we could wish that our space would permit us to give it to them in full, as it abounds in matter well worthy of their consideration.

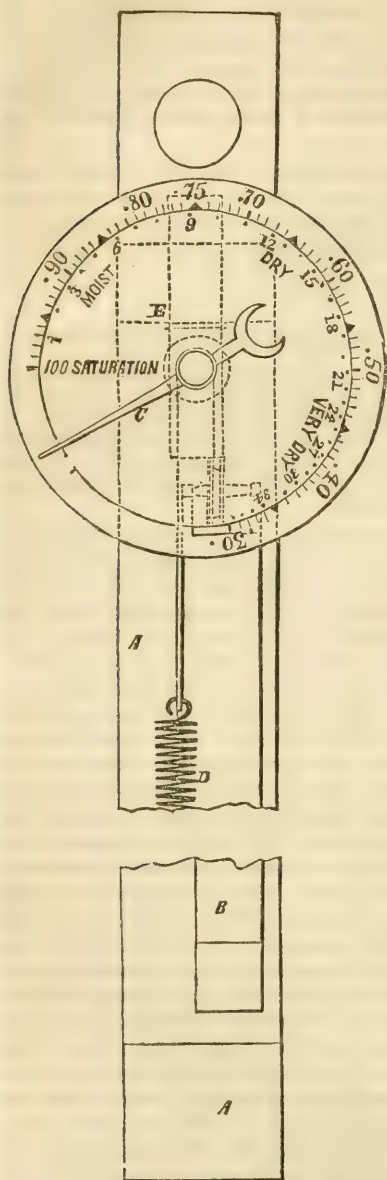
BRINGING THE CONSUMER TO THE SIDE OF THE PRODUCER.

"Two great lines of traffic run through the county. The expense of a small family from New-York need not exceed \$25. With \$50, forty acres of land can be purchased, and a willing hand can get work in any neighborhood, if he accepts bread and meat in payment. Three days in the week would suffice for this, and the remainder could be devoted to the farm. The log-house also will be built in exchange for labor. There is a railroad within 30 miles, connecting the county with the Ohio river at New-Albany. The timber is oak, poplar, beech, hickory and ash."

The above is from a letter that we find in one of the journals of the day, written by a Western farmer desirous of bringing to his side men who will exchange labor for "bread and meat," and for the timber required for the construction of "a log-house;" and we lay it before our readers because we desire to call to their attention the natural tendency that every where exists towards bringing the mouth to the food, instead of continuing for year after year, and century after century, to send the food in search of the mouths.

According to the British monopoly system, the true course to be pursued by this farmer would be to send his "bread and meat" to Liverpool, and to send with it his timber, to be hewed into the form fitting it for the construction of the log-house, and then to get it back again, having expended in the work of transportation four times as much labor as was required for raising the corn and the wheat, and for felling the trees. This would be deemed very absurd, yet it is not more so than is the process now in such full operation, of sending food to England to purchase iron to be laid over the great coal and iron ore regions of Pennsylvania, Ohio, Indiana, and Illinois, in which railroad iron could be produced at less cost than elsewhere in the world, were it not for the perpetual changes in the prices of England. We now have iron at a low price, and it will continue low until England shall have destroyed American competition in its production, and then it will be high again; and thus it is, and always has been, that the American farmer and planter have been prevented from bringing to their sides the artisan who, in exchange for "bread and meat," could furnish the machinery required to enable them to convert their cotton into cloth, which could cheaply be carried to distant markets. The writer of this letter, so anxious to give his "bread and meat" in exchange for the labor required upon his farm, would, we doubt not, be found opposed to the adoption of measures tending to make *a market on his land for all the products of the land*, enabling him to improve his land and to grow rich himself. The time, however, cannot be far distant when he will awake to the fact that in making that market he will be contributing toward the establishment of *perfect freedom of trade*.

PORTABLE HYGROMETER.



THE use of the hygrometer for horticultural purposes (in which its principal value is found) has long been known and applied; but, from the want of sufficient sensitiveness on the part of the instrument, or imperfection in its construction, its advantages have not been fully realized. To remedy these defects, Mr. E. L. Simmons, of Coleman street, London, registered, in 1847, what he terms "Simmons' Portable Hygrometer," which has proved, as we learn, a very valuable instrument; an illustration of which we have appended, for the benefit of our horticultural readers. It is so simple in its construction, that any one may avail himself of its benefits. It not only shows at sight the humidity of the atmosphere in decimal parts of the saturation, but furnishes an instantaneous means of ascertaining the dew-point. A is a back-piece, of metal or glass; B, a long thin piece of wood, with the grain running in a transverse direction to its length, which is made fast at the lower end to the back-piece A, and connected at its upper or free end to the axis of the index hand C of the dial-plate E, on the face of which the decimal parts are engraved; and D is a spiral spring, which is secured to a bracket projecting from the back-piece A, and connected by a cord to the axis of the hand C. The constant tendency of the spiral spring and cord is to keep the index-hand at what may be called its normal state; while the piece of wood, being elastic, expands and contracts with the increase or diminution of moisture in the atmosphere; and, as it contracts or expands, draws the index-hand round in one direction or the other. The dew-point is ascertained by subtracting the number

under the index-hand from the temperature of the air at the time, the remainder being the dew-point, or the temperature in degrees of Fahrenheit corresponding to the quantity of moisture in the atmosphere.

SCIENTIFIC AGRICULTURE AND RELIGIOUS PROSPERITY.

BY REV. WILLIAM CLIFT, STONINGTON, CONN.

It is a superficial view of agriculture, to regard it as isolated from other employments. Every lawful calling is linked with every other, and contributes its share to the general good. Man can do nothing worthy of his manhood, that will not make the race happier and better. This connection between the varied occupations of men is more obvious in some cases than in others. It is generally acknowledged that religion lies at the bottom of social prosperity. The reaction of secular business upon religion is generally overlooked. Stagnation in the former is incompatible with thrift in the latter. A parish where all earthly interests droop, where the husbandman, the mechanic, and the manufacturer alike fail of success, is not likely to see piety increasing. The man that is nerveless and disheartened in the prosecution of secular enterprises, will find it very difficult to "be fervent in spirit, serving the Lord." In his straitened circumstances and poorly remunerated toils, how hardly shall he "devise liberal things for Zion," whether at home or abroad!

There are parishes in New-England, once able and self-sustaining, now so impoverished, by lack of skill and enterprise in business, that they have lost the ability to support gospel institutions among them, without foreign aid. Whatever may be the moral disposition of the people, they lack the pecuniary means to pay a minister's salary. That many, if not most, of our rural parishes are waning in numbers, wealth, and influence, is generally conceded by intelligent men, without any statistical knowledge of the fact. The most cursory observation shows it. The extent to which this decrease has gone on would probably surprise any one who has not had his attention particularly called to this subject.

In the August number of the *Home Missionary*, we find the following account of the Congregational parish in Bolton, Ct. :—

"The time has been when this church needed not the aid of sister churches. Here were men of wealth, enterprise, and energy, who unitedly labored in the cause of Christ, and honorably sustained divine institutions. In the year 1722, they made ample provision for the support of a pastor, and were in a condition to command the best talent in the ministry. They had able ministers; and, in the early history of missions, this church contributed annually to the Connecticut Missionary Society, not having the most remote idea that it would ever be a suppliant at the door of the Home Missionary Society."

"The causes of the decline in piety and enterprise are not without some interest. Bolton included the larger part of Vernon for thirty years after President Edwards accepted a call here; but it was comparatively an unimportant part of the town. Its streams ran noiselessly through tangled forests; while Bolton Centre was a place of business, occupied by men who were princes in the land. Orford, then a waste place in East Hartford, was dependent for pasturage and bread upon this fertile mountain. Now, Vernon contains three, and Orford—under the name of Manchester—two Congregational churches, and each the same number of other evangelical denominations, and they are all golden candlesticks; while Bolton church, the mother of them all, sits solitary as a widow, dependent on charity, for there are none among her sons and daughters to guide her. They are gone, some among the leading men of several of these churches; more are scattered all the way from this

to California, promoting, as we hope, the kingdom of Christ. 'She that hath born seven languisheth.' Our most enterprising and energetic youth go from us every year, to swell the population of the villages around us, or to lend an impulse to the tide which is bearing the institutions and the civilization of the Puritans to the Pacific.

"It is not more certain that the living springs, gushing from our mountain sides, will send their contributions to drive the machinery in the lower towns, than that our youth will be there to guide the spindle and the loom. The consequence is, that real estate has been depreciating here for fifty years; and the poor, who will pay small rent, or buy only on lower terms than in any of the neighboring towns, can find a home among us. They who have the means to emigrate, do so, and our number lessens every census, though not so fast as our valuation, for poverty comes like an armed man."

Such is the graphic description of an agricultural parish by its present pastor.

By referring to the census returns, I find the population of Bolton in 1810, 700; 1830, 744; 1840, 739. The proportion of agriculturists to manufacturers is 164 to 23, showing the main business of the town to be farming. The statistics of the census of 1850 are not at hand; but if they were, they would probably show no substantial increase for the last forty years. The following table of towns in New-London county shows the same state of things in other parishes:—

	Pop. in 1810.	Pop. in 1830.	Pop. in 1840.	Farmers.	Manufacturers.
Waterford, -	2185	2477	2329	695	131
Lisbon, -	1128	1166	1052	564	41
Franklin, -	1186	1194	1000	794	19
Montville, -	2187	1972	1990	1187	98
N. Stonington,	2524	2840	2269	1661	196

It is believed that there is no exception to this state of things in any agricultural parish in Connecticut; for these figures do not show the full extent of the decrease in such parishes. These towns include villages where manufactures flourish, and which increase in population; but, notwithstanding such increase, the towns, as a whole, show no large addition to their population for the last half century. Such parishes have not the population, the wealth, or the influence they had fifty years ago.

To every good man, these examples of unthrift and decline are sad spectacles. They are contrary to the genius of Christianity, which not only "makes the wilderness bud and blossom as the rose," but keeps the wilderness it has reclaimed in perpetual luxuriance.

The decline of our agricultural parishes is too often regarded as hopeless. Go into any of them, and converse with that class of farmers who take no agricultural paper, and, while they concede the fact that their lands are less productive than formerly, they propose no remedy. Is there no help?

Certainly it ought not to be so; for the right use of every thing that God has made improves it, while man's works only wear out in the using. Mind improves by use, and is broken down only by neglect or abuse. The soil is as much God's workmanship as mind. Use it rightly, and it will not only never wear out, but always improve. There is no good reason why the soil should not every year increase in riches and in its capacity to produce aliment for man and beast. Any usage that does not secure this result is an abuse of one of the works of God.

The natural working of the soil, under the influence of light, heat, and

moisture, secures this result. The decay of vegetation on wild lands, every year increases the mould and all those elements of fertility which future generations of plants will require. It should be the office of human tillage to increase the action of these natural agencies, and to hasten the process of amelioration. We should come to this conclusion upon general principles, were there no science to demonstrate its truth. The soil would be an exception among all the works of God, if it were run down by legitimate use. But agricultural science shows us beyond all cavil that good tillage, while it gives the amplest rewards, improves most rapidly the capacities of the soil for future fruitfulness.

If these principles are correct, it is quite manifest that far the greater part of the husbandry of our land is a flagrant abuse of one of God's gifts. It is wearing out the soil and dissipating the inheritance of future generations with reckless prodigality.

Says Dr. Lee, in the Patent Office Report on Agriculture for 1849 and '50 :—"Of the twelve million acres of improved land in the State of New-York, one million are so cultivated as to become richer from year to year. These improving soils are in the hands of forty thousand cultivators, who take and read agricultural journals, and nobly sustain the State and County Societies of that commonwealth.

"Three million acres of the twelve million are so managed as barely to hold their own in point of fertility. These lands belong to a class of persons who do as well as they know from personal observation, and seeing how reading men improve their estates and domestic animals.

"Eight million acres are in the hands of three hundred thousand persons, who still adhere to the colonial practice of extracting from the virgin soil all it will yield, so long as it will pay expenses to crop it, and then leave it in a thin, poor pasture for a term of years. Some of these impoverished farms, which seventy-five years ago produced from twenty to thirty bushels of wheat per acre, now yield only from five to eight bushels. In an interesting work, entitled '*American Husbandry*,' published in London in 1775, and written by an American, the following remarks may be found on page 98, vol. I. :—"Wheat, in many parts of the province, (N. Y.,) yields a larger produce than is common in England. Upon good lands about Albany, where the climate is the coldest in the country, they sow two bushels and better upon an acre, and reap from twenty to forty; the latter quantity, however, is not often had, but from twenty to thirty is common; and with such bad husbandry as would not yield the like in England, and much less in Scotland. This is owing to the *richness and freshness* of the land."

"According to the State census of 1845, Albany county now produces only seven and a half bushels of wheat per acre, although its farmers are on tide-water, near the capital of the State, with a good home market, and possess every facility for procuring the most valuable fertilizers. Dutchess county, also on the Hudson river, produces an average of only five bushels per acre; Columbia, six bushels; Rensselaer, eight; Westchester, seven; which is higher than the average of soils that once gave a return larger than the wheat lands of England, even with bad husbandry.

"Fully to renovate the eight million acres of partially exhausted lands, in the State of New-York, will cost at least an average of twelve dollars and a half per acre, or an aggregate of one hundred million of dollars. It is not an easy task to replace all the bone earth, potash, sulphur, magnesia, and organized nitrogen in mould consumed in a field which has been unwisely cultivated fifty or seventy-five years. Phosphorus is not an abundant mineral

any where, and his subsoil is about the only resource of the husbandman, after the surface salt has lost most of its phosphates. The three hundred thousand persons that cultivate these eight million acres of impoverished soil annually produce less by twenty-five dollars each than they would if the land had not been injured.

"The aggregate of this loss to the State and the world is seven million five hundred thousand dollars per annum, and more than seven per cent. interest on what it will cost to renovate the deteriorated soils. There is no possible escape from this oppressive tax on labor of seven and a half millions of dollars, but to improve the land or run off and leave it.

"That the latter has been done to a large extent, is shown by comparing the population in rural districts at the census of 1830 with that of 1840. In nearly half of the towns in the State, population has decreased, notwithstanding the rapid growth of cities and villages, demanding an increase of farm laborers to supply the mere local markets."

This curse of depopulation and poverty, which follows the abuse of the soil, is not to be wondered at. Every good which God has given us has its laws—must have them—to guard it against abuse, and preserve it for the happiness of future generations. Retribution follows the violation of these physical laws in this instance. The soil, as if indignant at the treatment it receives, spews out the population that fail to enrich and improve it, as the stomach rejects all unwelcome intruders that it cannot use to replenish and build up the system.

What, then, is the remedy for these wasting agricultural parishes? They are so numerous, in all the older States at least, that the question is one of public importance, and demands the attention of even philanthropists and Christians.

We answer, the remedy is not mere preaching or moral appliances of any kind. The poor wise men in our pulpits, though more largely the benefactors of the public than any other class, will find an evil here that the ethics of no school in theology will directly meet. Were their readers

"All ear,
And took in strains that might create a soul
Under the ribs of death,"

they could not make of them flourishing congregations. The souls are not there to be converted. There is not capacity in the wretched husbandry that prevails to sustain them and make them an energetic and thriving parish, if they were converted. Religion corrects the maladies of the heart. It does not promise directly to remedy defects of mind, or to reform the bad results of a wrong mental training. Piety will not give a man the results of experience and business tact. It will not directly make a man a better farmer. But finding a farmer or mechanic intelligent in his business, it will furnish him with new motives for its vigorous prosecution, and teach him to make a wiser use of his accumulations.

There is a physical rather than a moral cause for many of these spiritual wastes and waning parishes in New-England, and there must be corresponding appliances to remove the evil.

The one thing wanted to renovate the soil and to bring back prosperity to these parishes is scientific agriculture. This will make husbandry as profitable as other callings, and will change it from dull plodding and drudgery to a business of intelligence and taste. The aspiring sons of our New-England farmers, finding employment for mind as well as muscle in husbandry, can

easily be retained at home to improve and adorn this heritage of the Pilgrims.

Here is the appropriate field of labor for our agricultural journals ; and the man who shall succeed in putting these upon the farmer's table, beside his newspaper and his Bible, will have done a good work for the farmer, a good work for society and religion. The farmer does not believe it now, but as he reads and practises, he will believe it, that with the same labor and expense his crops may be increased to thirty, sixty, or an hundred-fold ; that the same sterile acres which now starve their hundreds, and eject as a burden all the natural increase of population, are capable of supporting their thousands in joy and plenty.

Disseminate agricultural knowledge in every family, and a new era will open upon these rural districts. A remedy will have been found for a great evil ; the chief embarrassment of many parishes will have been removed, and their pastors cheered and strengthened in their work.

PROSPECTS FOR WOOL GROWING IN AUSTRALIA.

THE recent discovery of gold in Australia has been followed by the abandonment, to a considerable extent, of the sheep culture of Australia, and great numbers have, as it is stated, already been exterminated. The subject is exciting considerable anxiety in England, and, as it is one that must affect the prospects of the wool-growers of this country, we lay before our readers the following remarks upon the subject, which we take from an article in the *London Times* :—

"In California, the discovery of gold was made in a country where society was as yet rude and unformed, and no branch of industry had been cultivated with any degree of prominence or success. The new State is the creation of the gold mines, and its population consists, not of inhabitants of the country who had relinquished their regular occupations for this more attractive pursuit, but of persons drawn from every quarter of the earth, and whose absence from their respective communities was, in many cases, felt to be a relief rather than a burden. The case of the Australian colonies (for this purpose they may all be considered as one) is as different as can possibly be imagined ; besides the usual occupations of agriculture, they have, as every body knows, become a field for pastoral enterprise on a scale of unequalled magnitude. The sheep, which constitute their principal wealth, are divided into flocks varying from four hundred to a thousand in number, each of which is intrusted to the care of a single shepherd. Two of these flocks are generally driven together to the same station, where a third person resides, whose duty it is to change the hurdles, and watch the sheep by night. The country being infested by wild dogs, it is absolutely necessary that some one should always be present with the sheep, in order to protect them from this cause of destruction, and the force required for this purpose is about three men to every twelve hundred sheep. Now, in the year 1848, the number of sheep in New-South Wales and Port-Philip exceeded eleven millions six hundred thousand, not to speak of the flocks of South Australia or Van Diemen's Land. It is not, probably, unreasonable to calculate that, in the three years which have elapsed since this return was made, the number of sheep has increased to at least fourteen millions. This enormous amount of property exists from day to day, by virtue of the unceasing care and attention bestowed upon it by the shepherds, under a rigid system of central superintendence ; without that care, it could not exist for a single week. Now, let our readers imagine the effect which must be produced on the mind of the proprietors of these fourteen millions of sheep by the information that a gold-field has been discovered, which is certain to attract away from their existing engagements every shepherd and hut-keeper in their employment. It will be vain to attempt to retain them by offers of increased wages. One employer of labor may compete with another, but who can bid against the imaginary riches of an Eldorado, in which every adventurer expects to find a splendid fortune impatiently awaiting his acceptance ?

"Nor is this all. The shearing of the sheep, which takes place about the month of October, is an operation not generally intrusted to the shepherds, but to persons who

travel round the country for the purpose. Shearing cannot be long deferred in Australia without ruin to the fleece, from the presence of a seed of a particular grass, well known to the purchasers at our wool sales. If the fleece is not shorn before November, it is very greatly deteriorated in value. Now, those professional sheep-shearers are exactly the persons who, from their itinerant way of life and reckless habits, will be the first to swell the ranks of the gold-finders. . . . One of our great branches of manufacture has suffered considerably by the scarcity of its raw material—cotton. The woollen manufacture is threatened with similar peril by the events which menace the very existence of those flocks upon which we depend for the supply of the finer descriptions of wool. The only means of averting this calamity is to protect private property in New-South Wales, by enabling the Government immediately to assert its dominion over the public lands. These considerations are so obvious that we cannot doubt they will ultimately be attended to. What we principally urge is the imperious necessity of the utmost despatch, arising from the perishable nature of the property in jeopardy, and the danger only too likely to arise from the desperate character of that penal population, which is sure to meet for the first time in large and uncontrolled masses on the gold-fields of Australia."

From another of the journals of the day, we take the following :—

"Immense flocks, left by the shepherds to be devoured by wild dogs, are being killed by thousands, and boiled down for tallow. Many proprietors, it is stated, have been compelled to dispose of twenty thousand sheep in this way. As wool has hitherto been the great staple of the colony—the main reliance of the majority of settlers, and an article on which merchants have been accustomed to make large advances—there are not wanting writers who draw gloomy pictures of the ruin which will, in their judgment, follow this infraction of the ordinary course of affairs."

VIRGINIA AND HER INTERESTS.

We give below the conclusion of a letter from an eminent Virginian, to which we earnestly invite the attention of our readers, and particularly that of those of the Southern and Western States ; for what is here said of Virginia is equally applicable to each and every one of them. Concentration is essential to the progress of agriculture, for it is essential to the development of intellect ; and the result of such development is always exhibited in the discovery of new modes of action and new machinery with which to act. The existence of the reaping machine is due to the dissemination of education among our people ; and it is needless to say that schools are better and more easily maintained where men are enabled to combine their efforts and live together, making a market on the land for its products, and thus improving their land, than where combination of action is rendered impossible by reason of all being engaged in the single pursuit of agriculture, and where the soil is exhausted by sending all its products to be consumed in distant markets, followed by the exhaustion of its owners and the abandonment of the land. What Virginia needs is combination of action ; and that cannot be obtained until she shall awake to the fact that her farmers and planters need protection against the British monopoly system, which looks to compelling all the agriculturists of the world to make their exchanges in British markets, and which covers monopoly under the mask of free trade.

"Every body in England now wonders that a machine [McCormick's reaping machine] at once so simple and so effective, and so precisely adapted to the wants of British agriculture, should never have been invented and brought to perfection by some of their own people, and that it should have been reserved for a modest inhabitant of the mountains of Virginia, more than three thousand miles distant, to conceive and execute and bring to them what so exactly suited them, without their having been able previously to form a distinct conception either of its nature or its practicability. What renders this the more extraordinary (and it is a circumstance which greatly enhances both the merit and the glory of the American invention) is, that the minds of the most ingenious mechanicians in

Great Britain had been earnestly directed to the same object; for the catalogue of the Exhibition registers no less than eight different but very imperfect essays towards its accomplishment. My own observation last year, at the annual meeting of the Royal Agricultural Society of England, convinced me that a good reaping machine was the great *desideratum* in British agriculture. In the immense and almost infinitely diversified collection of agricultural implements displayed there, no instrument of that kind was seen; and yet it was evident that in a climate so humid and uncertain, some accelerated and at the same time economical process of getting in their harvest was a matter of the highest importance. I immediately wrote to our friend, C. J. Meriwether,—as he will, doubtless, recollect,—that if the ‘Virginia Reaper’ were sent out to the Great Exhibition of the next year, for which the arrangements were then commencing, it would make the fortune of its inventor. It has not only done this, but it has *reaped a harvest* of honor and renown for himself, his native State, and the reputation of American genius in general, which is a result far more to be prized.

“With this encouraging example before us, are we not strongly invited to some change in the direction which has been heretofore so exclusively given to the youthful talent of our State? As soon as our young men leave college, they crowd by hundreds into what are called the learned professions, which are already filled to repletion, or they devote themselves to a still more sterile and unprofitable employment of their faculties, both for themselves and the country, in mere party politics. If the same amount of mind and energy were applied to those useful practical pursuits in which science is the auxiliary of art in indefinitely multiplying the results of labor and unfolding the latent capabilities of nature, what a magical change would soon be manifested in the prosperity and power of our ancient Commonwealth, rich, as all admit her to be, in every element of moral, intellectual, and material wealth!

“In reflecting upon this subject, as I often do, with a solicitude ever alive to the honor and destinies of my native State, I have thought that some modification of the systems of education pursued in most of our public schools would greatly contribute, and is perhaps indispensable, to introduce the change which appears so desirable in the active direction of our mental resources. Could not that education be made more *practical*, without abating any thing from the high standard of science and learning which should characterize it, simply by giving more development to the *applications of science* to the various branches of industry and art, as is done in the admirable institutions of this country, the *École Polytechnique*, the *École des Ponts et Chaussées*, the *École des Mines*, and the *École Centrale des Arts et Manufactures*, from which England, with her usual sagacity, has taken a hint in the establishment of her ‘Government School of Mines and Science applied to the Arts,’ not being able to engraft those new studies upon the ancient and *chartered* systems of her universities? Whether the object is to be accomplished with us by some modification in existing institutions, or by the establishment of new and special institutions, is a question on which I am not prepared to pronounce an opinion. Those who are more competent than myself, recognizing the utility of the end, will, I trust, devise the proper means; and my prayers will be for the success of whatever they shall adopt, as they ever are for the happiness and prosperity, in all things, of my native land.

“Most truly and faithfully yours,

W. C. RIVES.”

MINERAL RESOURCES OF THE WEST.

THE *Galena Advertiser* gives an account of a discovery of lead ore, which promises to surpass any thing of the kind on record. It was made about two miles north-east of the Linsipheur Mound, is two miles distant from any other diggings, on a farm in the prairie, and was made by a boy finding mineral in a creek. On examining the bottom of this creek, it was found to be almost a solid mass of lead ore for some ten or twelve feet in width. Some three or four holes have been sunk about four feet in the clay, on each side of the creek, and specimens of large block mineral taken out, weighing from fifty to one hundred pounds. The ore lies between the clay and rock, forming a horizontal floor, and has been proven on one side of the rock for fifteen feet in width. The farm and discovery is owned by Messrs. Snyder and Turner, of Dubuque.

Scarcely a day elapses that brings not with it some new discovery of great mineral wealth, or rather of what would be wealth could the farmers and planters of the country awaken themselves to the fact, that combination of action is essential to their prosperity, and that the agriculture of no nation has

ever flourished when the loom and the spindle, the hammer and the anvil had not taken their places by the side of the plough and the harrow. Iron ore abounds throughout the Union, and limestone abounds, and coal abounds; and food so much abounds, that the farmers are every where storing their grain for want of a market in which to sell it. The warehouses of our cities are, nevertheless, groaning under the importation of food in the form of iron; for the whole value of iron consists in the labor expended in producing it, and nearly the whole value of the labor consists in the food consumed by the laborer. Lead abounds throughout the West, and from week to week we hear of new and great discoveries of it, and here we have one that is said to surpass any one as yet recorded; and yet from year to year the export from the West of food, in the form of lead, diminishes, when it should so rapidly increase! We beg our western readers to study the following facts, and then decide for themselves if it be not time that they should require of their representatives to aid in the adoption of a policy that tends to make a market on the land for the products of the land:—

ARRIVALS OF LEAD IN NEW-ORLEANS.

Tariff of 1842.				Tariff of 1846.			
1843,	-	-	571,000	pigs.	1847,	-	630,000
1844,	-	-	630,000	"	1848,	-	606,000
1845,	-	-	732,000	"	1849,	-	508,000
1846,	-	-	785,000	"	1850,	-	415,000
					1851,	-	325,000

We have here an increase of forty per cent. under a system that affords encouragement to the laborer to come to the West, and there to eat food while making lead; and a diminution of almost sixty per cent. under a system which teaches that the farmer must send his food to Great Britain, there to be exchanged for lead, or keep it at home, because unable to sell it at any price that will not be ruinous to him.

That, however, is but half the story. The man who mines lead in the West consumes potatoes, and turnips, and milk, and veal, and a thousand other things that will not bear carriage to distant markets, many of which are wasted when a near market does not exist; and the refuse of what he eats goes back upon the soil, to aid in maintaining it in its power to produce food; and the farmer finds that the more lead he is able to buy, the more wheat he has to sell; whereas the man who mines lead in Cornwall eats the potatoes and the veal and drinks the milk of England, while the farmer of the West exhausts his land in raising wheat with which to purchase the little lead he is enabled to consume, and then he flies to other lands to be again exhausted; at every step increasing his distance from market, and diminishing his power to get to it, and rendering it more and more necessary to mortgage his farm for the purchase of iron with which to make roads by which to reach it.

REMARKS ON VETERINARY MEDICINE, &c.

BY JAMES BRYAN, M.D.,

PROFESSOR OF INSTITUTES IN PHILADELPHIA COLLEGE OF MEDICINE.

I PROPOSE in the following pages to present a few remarks on the subject of Veterinary Medicine, and will take as the basis of my comments a translation which I have made from the transactions of the French Academy of September, 1851.

The subject of Veterinary Surgery is one that, in my opinion, has not as yet

commanded that attention in our country which its importance demands. The amount of property invested in horses alone is very great, and attention to their diseases will, doubtless, be worthy of the political economist.

In 1847, according to statistics given in the first volume of "Styker's American Register," the total number of horses, mules, and asses was 5,289,510. At the average price of twenty dollars apiece, this number costs \$105,790,320. If we admit that two thirds of these are horses, each valued at fifty dollars, we have the sum of \$206,317,200 invested in horses alone.

It is a notorious fact, that at the same time that the horse is the most expensive machine or animal which is used in society, the losses from disease, accidental and natural deaths, are greater than those of any other animal. The diseases are simple, but fatal, chiefly on account of the want of medical skill on the part of those who have the care of the horse. Who are our veterinary surgeons? Generally a few intelligent farmers and blacksmiths, who pick up their information from the observation of such diseases as are presented in their immediate neighborhood.

The mere fracture of a leg involves the loss of a horse worth five hundred dollars. Why can we not have a veterinary college in one of our cities, in which intelligent men would be educated for the responsible duties of the practice of medicine among horses and other animals?

But we must return to our translation: "M. Magendie presented to the Academy of Sciences, in the name of the Minister of War, the third volume of *Memoirs and Observations on Military Veterinary Hygiene and Medicine*."

This work, published at the expense of the Government, is compiled by the commission termed *Hippic*, instituted by the Administration of War, many members of which are also members of the Academy. M. Magendie presides over the commission. This volume contains—1. An analysis of the veterinary reports of the army on hygiene and medicine, during the years 1847 and 1848. 2. Special works of the veterinary surgeons of the army. 3. Annual concours—pieces honored with medals or mentioned honorably. 4. Experimental studies of the *Hippic* Commission. 5. Documents published by the Administration of War. A few words on each of these subjects will present their character and value.

Annual Reports of the Veterinary Surgeons of the Army for 1847 and 1848.—Like those which have been analyzed in the preceding volumes, these volumes contain a great number of interesting observations. How can it be otherwise? Sixty-six thousand horses have formed for several years the effective force of the French army. These animals are daily examined by men of experience and intelligence, and there result, consequently, a multitude of curious and interesting remarks. Of this, I will cite those which relate to the animal loss.

The tables of mortality established for age, sex, army, province, and disease, demonstrate many remarkable and unknown facts. For example, they indicate the dépôts of breeding which furnish good and bad horses. In reference to the total losses, these tables demonstrate that they were, in 1847, $\frac{62}{1000}$; and in 1848, $\frac{52}{1000}$; a result desired and pleasant to see. But alongside of this amelioration, so profitable to the interests of the country, the reports of the veterinary surgeons present a fact of quite a different character: one half of the horses experience diseases, more or less serious, during their stay at the dépôts; $\frac{32}{1000}$ die, and $\frac{13}{1000}$ must be renewed. We remark that these losses take place before the young horses are sent to the corps, and that, consequently, they are independent of those which result from transportation and delay at the regiment, before entering the ranks. This state of things appears to exist

to the present time. The Minister of War has also directed that investigations should be made in reference to the causes of disease and death in young horses during their stay in the dépôts or in the corps, before passing to the squadron; besides this, the commission of Hippic-Hygiene has received the mission of examining whether the regimen to which the horses recently introduced are subjected has any bad influence on their health. This inquest, which is now in process of execution, will, we hope, have a happy influence on an evil which should be remedied immediately.

Although these veterinary reports are of great utility, yet they might be made more so. The questions, for instance, might each year be changed so as to embrace a great number of subjects. It is equally desirable, for the proper making up of these reports, that the physical and chemical sciences were more familiar to the veterinary surgeons, and that more liberty were allowed them in their labors.

To give an idea of the manner in which these reports are made up, the commission of Hygiene think it proper to print them *in extenso*. We will thus be able to judge of the merits and defects of these compositions, as well as the duties they are called upon to render to science and the administration of war.

Many of them (the surgeons) resort to heroic treatment, both in bleeding and the use of medicines. It is desirable that a more severe scrutiny be made into the cases reported cured. It is not sufficient that a patient should be well after a certain treatment, to conclude that the treatment cured him. Such a conclusion is only admission after proof that he would not get well from certain hygienic regulations. In leaving a certain number of patients affected with a given disease to the resources of nature alone, and in comparing the number of cures with those which follow medication, the relative value of medical treatment might be arrived at. Should the first be found the best mode of treatment, it would be a great saving to the state.

Special Labors of the Veterinary Surgeons.—Ever since its appointment, the commission on Hippic-Hygiene has invited the veterinary surgeons to communicate freely with it, in order to improve science. Many distinguished men have responded to the call. This volume contains two memoirs, one by M. Laisné, senior veterinary surgeon to the 7th Regiment of Artillery, on the mode of curing certain lamenesses by means of the cauterium alone; the other by M. Gillet, senior surgeon to the stables of the dépôt for new horses at Alençon, on the Equine races of the department of the Orne, one of the localities where heretofore the best horses were procured. These works each contain, in their specialty, the following observations and studies, which clear up several doubtful questions in hippology. The memoir of M. Gillet has appeared so valuable, that, on the proposition of the commission of Hippic-Hygiene, a medal of gold has been decreed to the author by the Minister of War.

Annual Concours among the Veterinary Surgeons of the Army.—By ministerial direction, an annual concours is held among military veterinary surgeons. The question proposed in 1848 was: On the races of horses in France, in the remontes or dépôts of the army. Only one memoir was written on the subject. This work of M. Mariot, veterinary surgeon attached to the dépôt of Tbesdin, contains interesting details on the qualities of the Morine or Boulonnaise race, also a curious statistical account of this useful race. I regret that this was not known to General Lamoricière when he compiled his remarkable report.

Experimental Studies of the above Commission.—The commission has

terminated its experiments on the use of marine salt in the daily ration of the horses of the army, followed for two years, and applied to more than three thousand horses of the army; the experiments afford striking results. It is demonstrated that marine salt introduced into the food, affords no advantage to the health of the horses; that it does not preserve them from diseases, especially from the acute and chronic glanders, farcy, &c.; the same thing may be said in reference to fattening war-horses. The experiments prove, without doubt, that the salt has no effect in these respects.

The commission has also stated that the use of marine salt in very large doses has no bad effect upon the horses; this substance, when thus given, passes off by the urine, increasing the proportion of urea. It has been proved that locomotion in trotting or galloping is favorable to digestion, and a horse that is in action digests more than one at rest. Experiments have also been made on the effects of the secretion of the parotid glands of the horse, compared with those of mixed saliva.

DOMESTIC PRODUCT OF IRON.

IN 1846, Mr. Walker stated that the domestic product of iron was 850,000 tons; and that of 1847 undoubtedly considerably exceeded that of the previous year, as the country was then highly prosperous, and the demand was greater than the supply. In four years after, it had fallen to 564,755 tons, as is shown in the following return, under the late census:—

State.	Capital.	Tons.	No. hands.	Wages.	Produce.
Pennsylvania, - - -	\$8,570,425	285,702	9,285	\$2,115	\$6,071,513
Ohio, - - - - -	1,503,000	52,658	2,415	2,448	1,255,850
Maryland, - - - -	1,420,000	43,641	1,370	2,127	1,056,400
Tennessee, - - - -	1,021,400	30,420	1,713	1,282	676,100
New-Jersey, - - - -	967,000	24,031	600	2,120	560,544
Kentucky, - - - -	924,700	24,245	1,845	2,023	604,037
Missouri, - - - - -	619,000	19,250	334	2,428	314,600
New-York, - - - - -	605,000	23,022	505	2,496	597,920
Virginia, - - - - -	513,800	22,163	1,115	1,267	521,924
States under half million,	1,202,100	39,623	1,516	----	1,089,889
Total, - - - - -	\$17,346,425	564,755	20,298	----	\$12,748,777
Value raw material and fuel, - - - - -				\$7,005,289	
Wages, rate of \$421,435 a month, - - - - -				5,057,220	
					\$12,062,509

Apparent net profit, equal to 3.96 per cent. on capital, - - - \$686,268

At that date, very many furnaces still continued to struggle on for existence, their owners hoping for a change of policy, a hope that has been since abandoned; the consequences of which are seen in the fact that the domestic production has since fallen to little over 400,000 tons. The diminution in the market for the products of the earth, resulting from this decrease in the product of pig iron alone, amounts to more than eight millions of dollars; and that amount might be far more than doubled, were we to carry our inquiry into the refining and manufacture of the iron; whereas, had the tariff of 1842 remained unchanged, we should have increased the quantity to a million and a half of tons, and thus have made an additional market on the land to the extent of forty or fifty millions of dollars. The same cause that produced, from 1842 to 1846, an increase in the domestic production amounting to more than 600,000 tons, would have given us in the years that have since elapsed a similar increase; and

the same causes that enabled us to increase in that time our total consumption of domestic and foreign iron from 300,000 to 950,000 tons, would have since enabled us to increase our consumption to the quantity we have named—to wit, a million and a half of tons—and we would now be laying our roads with iron, the produce of the food and wool of the North and South, instead of storing the wheat and giving bonds for the iron. It is surely time that the planters and farmers should understand that they it is that need protection in their efforts to bring the consumer to the side of the producer, and thus enable themselves to save the cost of transporting the food to the mouths, by bringing the mouths to the food.

SKINNING WOODLANDS.

No practice is more repugnant to the farmer than skinning woodlands, and in some localities it should be so. But there are many farms, part of which is low, and only used as woodlands, where both the woods and the farm might be materially improved by skinning the woodlands. In many woods, the continuous growth of centuries has deposited a coating of leaves, which has been protected from entire decomposition and consequent departure in the gaseous form, by shade and moisture. In such cases, the accumulation has been greater than the current growth of the woods could re-use as pabulum. Such woods may be skinned with profit, for they contain a quantity of *leaf-mould, worth more than an equal bulk of barn-yard manure*, and which is packed so tightly that the atmosphere is excluded from entering the soil. Around many an old chestnut stump, from which in turn a dozen or more trees have been cut, may sometimes be found a load of leaf-mould, which, often being loosened by the grubbing-hoe, is light and redundant with inorganic value; and many an acre of woodland will furnish one hundred cords of wood, earth, and leaves, and still retain more leaf-mould than the current requirements of the soil will need for future growth of woods. A few years since, we were employed to visit a farm and advise modes of culture, where the farmer insisted that he had no muck or any other substance, from which he could make compost with his stable manures. His cleared land he valued at \$100 per acre. Standing on the high land of his farm, we observed that the land sloped from every direction toward twenty acres of woodland located at the lowest point, and in the very centre of his farm. We asked him the value of his woodland, beyond the wood it then contained, and he replied, as the land was wet and cold, he supposed \$20 per acre was all it was worth; and wanting muck. he had looked at this twenty acres for twenty years, without ever supposing it was proper to *skin it* for composting; indeed, he at first objected, on the ground that it would injure the land; but when assured that it would give 150 loads or more per acre of good material for making compost, and worth seven times the value of the land after removal to his manure shed, he ventured to take the matter into serious consideration. He has since taken off the surface of the woods, soil to the depth of a few inches, and in the deeper parts to the depth of a few feet, developing the fact that the fertile portions of the high lands had washed down and buried his trees beyond the proper depth. This removed mass of leaves, leaf-mould, and fertile soil, has been composted and added to his fields, rendering them fertile; while the drier portions of his woodlands have received, after being skinned, a coating of lime, not one tenth the cost of the value of the removed leaf-mould, and both the woods and the farm are increased in value.

We have tried this system most fairly on our own farm, and the skinned

woodland is not inferior to the parts not so treated ; but, on the contrary, the wood on the skinned portions, by the help of the lime added, far surpasses that of the adjacent portions not so treated, and the current growth of wood is materially improved.

But suppose, for sake of argument, that the woodland was destroyed by such treatment, still we should be largely the gainer, for the leaf-mould has been worth much more to us than the value of the woodland.

The true value of woods-earth is much greater than is supposed. The roots of trees travel in the soil to great depths, and there receive, year after year, the soluble inorganic portions of the subsoil, bringing them to the surface and forcing them into organic shape, as leaves, twigs, &c. One ton of these leaves, when dry, contains more inorganic matter than is held by any short-rooted crop grown on a similar area of land. In the fall, these leaves are deposited on the ground, accumulating until, after a series of years, the soil is deepened many inches, from constituents of the subsoil deposited as dry leaves on the surface soil. Nor is the deposit altogether of inorganic origin, for a lofty wood arrests gales, and the moist atmosphere, entering within its boundaries, is robbed by the leaves of growing trees in summer, and by the carbonaceous surface of the soil in winter, of its ammonia, carbonic acid, &c., and thus the organic as well as the inorganic accumulations are very great. Many woods are not browsed by cattle, and these accumulate leaf-mould rapidly, when situated in fertile districts, the atmosphere of which is at all times filled with the results of decayed vegetation ; and even when an old woods is browsed by cattle, the accumulated surface-soil has the rare power of receiving and of retaining their excrement more pertinaciously than when voided in open pastures.

Who does not know that an old woods, before being skinned, is sometimes so surcharged with leaf-mould as to refuse clover and other grasses, even in the more open spots, and when skinned and limed, at once come naturally into such growths as are valuable pasturage for cattle ? Be not afraid to skin a wood for a leaf-mould, when it will yield one hundred loads per acre, and is not worth, beyond the value of the wood, more than \$100.—*Professor J. J. Mapes.*

FLAX COTTON.

THE annexed notice of the progress of the arrangements for the production of flax cotton, taken from an account of the late New-York State Agricultural Fair, can scarcely fail to have interest for our readers of the planting States, and we desire to call to it their special attention. Southern policy has driven Southern labor almost exclusively into agriculture, for it has looked to the separation of the spindle and the loom from the plough and the harrow, the consequence of which is, that all the cotton-spinning machinery of the world is now located in the flax-growing countries of the world, which latter are now engaged in a vigorous effort to throw off all dependence upon the producers of cotton ; and that effort will be successful, and that at no distant period, if it be not so even at this moment. What, then, will be the condition of the planter ! Even now he is almost ruined, when his crop reaches two and three quarter millions, and even the prospect that such may be the size of the crop has reduced the price to an average of little more than thirty dollars per bale ; but let the present movement be perfectly successful, and there will soon be added a million of bales of flax to take the place of as many bales of cotton, and then even twenty dollars a bale will be considered

a high price. We entreat our Southern friends to study well their prospects, and to determine for themselves if their security against such movements will not be greatly increased by adopting the measures necessary for bringing the spindle and the loom to their own cotton fields, and thus making a market on the land for the products of the land.

"Nothing, however, arrested our attention in this hall but the specimens of flax-cotton and its various proportions, exhibited by E. G. Roberts, assignee of Claussen's patents for the United States. We saw one intelligent, influential citizen converted from skepticism to enthusiasm for flax-cotton by his first earnest examination. It *will* go inevitably. A cotton fibre scarcely distinguishable from Sea Island may be produced from flax by Claussen's process for six cents per pound; and a machine for breaking out the fibre from the unrotted stalk was exhibited by Mr. Clemmons, of Springfield, Massachusetts, which is calculated materially to expedite the flax-cotton revolution. This machine renders the entire fibre, with hardly a loss of two per cent. as "swingle-tow," straight, and wholly separated from the woody substance or "shives," at a cost which can hardly equal one cent per pound of dressed flax. Its operation is very simple, and any man who has seen it work a day may manage it. Its entire cost is from \$125 to \$200, according to size. It will be a shame to American agricultural enterprise if flax-cotton and linen are not both among our country's extensive and important products within the next three years."

UNSEASONED FUEL.

BY PROF. JAMES J. MAPES.

If farmers would ask themselves why charcoal will answer a better purpose than wood for melting iron, they would understand by analogy why well-seasoned wood is more economical for fuel. If charcoal be slightly moistened, it will be found to have no superiority over wood for any use as fuel. Three cords of green or partially seasoned wood will not warm a room for as great a length of time as one cord well dried, and entirely free from moisture. The rationale is simple, and, although to be found in books, is nevertheless true; it may be thus understood: "Substances contain heat as latent in proportion to their bulk." Thus, if we pour a cubic inch of alcohol on our head, and then fan it, the one cubic inch assumes the form of vapor, and becomes seven hundred cubic inches, capable of receiving a proportionate amount of heat, and therefore takes heat from the nearest hot object, *the head*, causing it to be cool. Water placed on the head and then rapidly evaporated, will cool the head from the same causes. It may now be understood that a single pint of water, contained in a piece of wood thrown on the fire, will first become one thousand seven hundred pints of vapor, and that this vapor will increase in size one five-hundredth part of its bulk for every degree of heat added, so that it travels up the chimney, carrying with it as much air as would warm all the air in a large room for a considerable space of time.

Let any farmer weigh a green and a dry stick of the same size, and he will be convinced that a very moderate-sized stick may have an extra weight of eight pounds, and therefore contain one gallon of water. If an iron network be placed over a wood-fire, and a number of shallow pans upon it containing water, so that a large amount of vapor is constantly rising, this vapor will so perfectly absorb the heat generated below, and carry it up the chimney, that the heat radiated in the room will be too slight to warm it, and similar effects must take place from the use of green or only partially seasoned wood. Indeed, wood may be rendered just sufficiently moist to permit its burning without radiating any useful quantity of heat in a horizontal direction into the room. Many suppose that green wood may be burned in stoves with profit. This is also an error, for the vapor will pass up the pipe, carrying with

it the heat, and prevent its being received by the iron and radiated into the room.

With these facts in view, should not every farmer provide a dry place for fuel, and have a stock at least sufficient for a year's supply always on hand?

The use of air-tight stoves throughout the country is diminishing the consumption of wood, and the supply of potash to the soil is comparatively decreased. These peculiar kinds of stoves will lessen the bulk of ashes by leaving them for a longer time than is usual in ordinary stoves; and indeed, so large a portion of the lighter part is carried off by the currents of air and smoke, that the remaining portion is nearly *pure potash*, and should be dissolved in water before application to the compost-heap. Large air-tight stoves will burn peat peculiarly well; and indeed, if rapidly filled and provided with a valve to shut off their connection with the chimney at a proper time, they may be emptied every morning of a bulk of *peat charcoal* equal to their size, and highly valuable both as a fertilizer and a deodorizer.

REGULAR FEEDING.

SYSTEM and order are highly requisite in the care of domestic animals, and it has been laid down as an important rule by the most intelligent herdsmen, to feed and water cattle at fixed times, and the same hour and minute every day. It is found that when fed thus, they learn to expect their fodder at the stated time, and remain quiet and uncomplaining until it comes around. "Complaints from his stock," says Stephens in his *Book of the Farm*, "should be distressing to a farmer's ear; for, he may be sure, they will not complain until they feel hunger; and if allowed to hunger, they are not only losing condition, but rendering themselves, by discontent, less capable of acquiring it."

This is true of all domestic animals, and should be heeded by the farmer. Let him so arrange his labors at the barn that every operation may be performed at a stated time, and he will find matters to go on much more comfortably and pleasantly than when all is left at hap-hazard, without system or regularity.

INTERESTING FACTS.

PROFESSOR JOHNSTON, in the course of lectures delivered by him before the New-York State Agricultural Society, stated that in this climate the temperature rises to 100° Fahrenheit five feet below the surface, and to 140° half an inch below it—facts which he says he learned himself with surprise. He uses them to illustrate the economy of nature in promoting vegetation.

The sunbeam is composed of three distinct and separate rays, one of heat, one of light, and one called the chemical ray. These three agencies exist in different proportions in the sunbeam in the spring, summer, and autumn. The blue or chemical ray is greater in the spring; the light greater in the summer. The chemical ray is less in autumn, and then the heating ray predominates. The proportion of these rays varies in different seasons of the year, in order that the growing plant may arrive at maturity. It has also been ascertained that the proportions of these agents vary in different climates.

It has been ascertained that the flower of a plant absorbs more heat than the other parts, and the dark more heat than the light; and hence it is inferred that the color of a flower is what determines the quantity of heat it requires, and the amount which nature supplies. It will be found that the soil and the plant contain nearly the same substances, the only one not in the plant being *alumina*. The mechanical function of alumina in the soil is to anchor the plant. Its tenacity is its available property. Some plants grow in mere sand, but the great majority of them require a certain degree of tenacity in the soil, which is obtained by mixing silica with clay. This alumina does not enter into the plant, but only gives to the soil the tenacity necessary to sustain the plant.

NEW BOOKS.

The Religion of Geology and its Connected Sciences. By EDWARD HITCHCOCK, D.D., LL.D., President of Amherst College, and Professor of Natural Theology and Geology. Boston: Phillips, Sampson & Company. 1 vol. 12mo, pp. 511. 1851.

The telescope of Herschel, as it revealed the countless multitudes of "glowing globes with varied being fraught," scarcely brought within the reach of human knowledge wonders more startling or novel than has the microscope or the chisel of the geologist. The stars in the blue depths are but as metaphors of immensity, so unreal to our finite comprehension seem those vast distances by which we are separated from the nearest of the fixed stars. Yet, when we turn to the pebble at our feet, the power of the telescope is demanded inversely, and we open into a world, the individuals of which are so small that hundreds of millions of perfect chambered shells, once inhabited by living beings, are brought to view in the compass of a single cubic inch of stone.

Materialism is ever ready to grasp at any fact or theory, no matter how crude or doubtfully established, as a weapon against Revelation. Geology, like astronomy, not permitted to disclose facts and establish laws and principles, is prematurely dragged into the contest between the Atheist and the Christian; and a science which is just now gaining a broad and comprehensive basis is alternately defended or attacked with as much earnestness as though the superposition of rocks or the problem of an elevated fossil were to decide the question of the divine origin of the Scriptures.

The work before us is the latest publication on the theological questions involved in the science of geology. Other writers have treated ably of these topics, but there are very few names which equal that of Professor Hitchcock, as authority in questions of religion and geology. He brings to his subject the maturity of thirty years' study of the science. He engages in the work with the enlightened mind of a scholar and the zeal of a Christian. Candid and just to opponents, he gives the views of others a free statement, and advocates his own with learning, ability, and force. This work is the best discussion of the relations of geology to Scripture yet published, and is worthy the distinguished reputation of the author. The folly of such works as the "Vestiges of Creation," the Lamarckian development theory, and the other hypotheses which Materialists have attempted to erect into a system of natural science, is clearly and ably exhibited in the arguments of Professor Hitchcock. The faith of the earnest Christian, the learning of the scholar, the practical and theoretical in the acquisitions of a diligent observer and philosophical laborer, all lend their value to these profitable and interesting pages.

Ollendorf's New Method of Learning to Read, Write, and Speak the Spanish Language.

By M. VELAZQUEZ and T. SIMMONNE, Professors of the Spanish and French Languages. New-York: D. Appleton & Company, 200 Broadway. 1 vol. 12mo, pp. 558. 1851.

A Key to the Exercises in "The New Method," &c.

The name of Ollendorf, author of "The New Method of Teaching the German and French Languages," has become inseparably connected with the system which bears his name. We shall not attempt to decide here in regard to Ollendorf's pretensions to originality in his "method." For many years, and before Ollendorf had become known as an eminent teacher, Manesca in our own city had pursued the same course, of which he was the author, and, as stated by a distinguished American writer, the original exercises he had himself written under Manesca's courses in this city, were taken by him to Europe, and there shown to Ollendorf, who forthwith produced his "New Method." Whatever may be the claims, however, of one or the other to the originality of the system, the name of Ollendorf has been given to it, and it is a distinction of which he may well be jealous.

The grammars of Ollendorf are in universal use all over Europe and this country. They are the most complete and critical, and at the same time practical guides to the acquisition of a foreign language ever published. They commence with the simplest of phrases, in which an article, a verb, and a noun or pronoun can be used, and gradually amplifying at each successive step, the rules of construction are fully and familiarly laid down, and illustrated with numerous examples, in which the *idioms* are also explained and made available to the learner. By almost insensible steps, the student is carried from one point to another, so that, on the completion of a thorough course by this method, he has gained a valuable knowledge of the language, scientific and idiomatic, which is a full preparation for practical use, either in conversation or reading. These works are sufficient to enable the student to acquire the languages without a teacher; and, indeed, one of the best features of the method is its adaptation to the purposes of self-education. We can only join in the general meed of praise which has been awarded to this system.

The Appletons are rendering an important service to this country by their publication

of Ollendorf's method, applied to the Spanish, and an English-Spanish grammar, for the use of Spaniards. The German, French, Spanish, Italian, and Latin have now been placed on their catalogue, while their valuable Lexicons, comprising the labors of distinguished scholars in the Old World and the New, afford all the aid a student can desire from such sources. We are glad to know that the public are not blind in their appreciation of these publications.

Winter in Spitzbergen. A Book for Youth. From the German of C. HILDEBRANDT. By E. GOODRICH SMITH. New-York: M. W. Dodd. 18mo, pp. 300. 1852.

This is a very interesting juvenile, containing, in a series of fire-side conversations between a father and his children, a lively and graphic view of Spitzbergen and its winter. The thread of the narrative is a story of two young men and the pilot of their vessel, left on Spitzbergen. The geographical and historical information contained in the story makes it as instructive as it is entertaining, and it will, no doubt, serve to beguile the winter evenings of a large circle of American youthful readers.

Philosophy of the Mechanics of Nature, and the Sources and Modes of Action of Natural Motive Power. By Z. ALLEN. New-York: D. Appleton & Co., 200 Broadway. 8vo, pp. 800. 1852.

We have just received from the publishers a large and very handsome octavo volume, bearing the above title, which discusses boldly and thoroughly the systems of physical science as hitherto understood, and particularly the laws of natural motive power. Electricity, Galvanism, Heat, Attraction, Cohesion, the chemical forces employed in the infinite changes in the organic and inorganic worlds, and all the other dynamical agents which have been made known in our philosophy, are elaborately investigated. The recent publication of the work has precluded the possibility of a perusal, yet the many passages we have read satisfy us that this treatise is the production of a profound and independent thinker, who is not overawed by the names of the brilliant discoverers and philosophical teachers of our own or the past ages, but, taking the facts they have discovered, and the truths they have taught, he aims to reach a position still higher, and nearer the central sun of all truth. The author regards the sun as the source of power; and perhaps we cannot do better than to define the basis of his system in his own words. In the preface, he says:—

"By tracing out the continuous propagation of the solar action upon terrestrial matter, throughout successive modifications of static and dynamic conditions of groupings of atoms into fuel, food, steamy vapors in the sky, crystals, &c., it admits of demonstration that all the preceding 'Inherent Forces' and 'Imponderable Agents' are resolvable simply into 'the propagation of mechanical action through the medium of electric matter.'"

On page 25, the author observes: "No appropriate term having been introduced into scientific language, to denote the continuous propagation of the dynamic action of the sun to terrestrial matter," he adopts the term *electro-dynamic action of the sun*, to express this action. There are two kinds of *natural static conditions*, fluids and solids, the natural and fixed groupings of certain atoms, while the changes undergone and the combinations produced by the forces employed by nature, are the *constrained static conditions*.

In examining the vast numbers and varieties of organic bodies, the author says that naturalists do not affirm an equal number of kinds of matter. But when the chemist finds about sixty *groupings of atoms* in the inorganic world, exhibiting sixty differently modified grades of power of propagating action, affirms that there exists an equal number of kinds of simple elementary atoms. On page 71, the author observes:—

"These considerations lead us to believe that the First Cause has seen fit to endue about sixty specific kinds of groupings of atoms of inorganic formations with sixty specific grades of powers of modifying, reciprocally, in directions between their respective centres, the propagation of the *electro-dynamic action of the sun*, in accordance with the similar system of the endowment of about a dozen kinds of groupings of the same atoms into organic formations of the mechanisms of vegetable and animal bodies with hundreds of thousands of different specific kinds or grades of powers of modifying continuously the propagation of the same electro-dynamic action of the sun. This plan establishes a perfect harmony between the systems of inorganic and organic formations."

The discussion is broad as the wide field upon which the author has entered; and the results of long and laborious investigation are easily discoverable in this work. As a philosophical production, it will doubtless find numerous readers. The author's system will doubtless be fully discussed in other scientific journals.

CORRESPONDENCE AND EDITORIALS.

PRESERVATION OF RIPE FRUIT.—About the season when the Madeleine pear is ripe, (in July,) I expected a friend, who I knew would be delighted with the taste of this fruit. He did not, however, arrive until the fruit (which you know lasts only a few days) was nearly gone. I gathered, notwithstanding, a few good specimens, and putting them into a dry, covered, tin vessel, surrounded this with ice, where it remained for two weeks. This, so far as I am aware, was an original experiment, and I knew not, therefore, how it would succeed; but on the arrival of my friend, the cover being removed, I was not a little gratified as well as surprised to find that the fruit had undergone little or no change, several of the pears being still hard, while those which were fully ripe when put into the vessel had not decayed.

As the success of this experiment was wholly beyond my expectation, I have since tried it on other fruits, as early peaches and summer pears, with equal success. I see no difficulty, therefore, in presenting our friends on the other side of the Atlantic specimens of our finest pears and peaches, if they are enclosed in dry tin or glass vessels, and placed in the ice-house of the ship. My experiments, however, have been only with small quantities of fruit, the vessels holding each but one or two quarts, as a common tin pail with a tight cover. If you think this new and worth knowing, please insert it.—J. L. COMSTOCK, *Hartford, Conn.*, Sept., 1851.

PANICUM MILLIUM, (MILLET.)—As an increase in the number of agricultural products of the country, millet is worthy of culture, and may come in along with the products of the field and garden to increase the variety of the farmer's productions. The millet, above mentioned, says the *Western Agriculturist*, is little known in the United States. I found it quite extensively used in Wisconsin by the Germans, as a substitute for rice, after being hulled; and it appears to be very nutritious and palatable when cooked the same as rice. I procured some seed, to ascertain if it could be raised to advantage in Ohio. It was sown about the first of May, at the rate of half a bushel of seed to the acre. By the tenth of July it was ripe and harvested. It requires to be cut as soon as the seed is ripe, as it falls out of the head very much if left standing too long. From what experience I have, I suppose it will yield from twenty to twenty-five bushels to the acre. It grows about two feet high, and has a head like broom-corn. The stem and

leaves are hairy, or what botanists call pubescent. Cattle are not fond of the straw.—S. LAPHAM, *Mt. Tabor, Oct. 13, 1851.*

POULTRY CHEAPER THAN PORK.—MR. EDITOR:—Allow me to say a few words in your paper in behalf of that much-neglected class of stock that are usually found upon a farmer's premises without "a local habitation," if they have a name. They are not thought worth enough to have quarters of their own, and so shift for themselves upon the first fence, tree, or out-house that affords rest to their feet. Even in these days of hen-fever, and of feathered stock imported from the farthest Ind and beyond, there are thousands of farmers who have no shelter for their fowls better than an apple tree or open shed. "The merciful man is merciful to his beast;" and it would be a good lesson for the improvident owner of these abused bipeds, if he could exchange places with them for one December night, when the thermometer stands below zero. The sty must have a place, and the grunTERS be made comfortable, with a waterproof roof and a warm bed; for pork cannot be made to good advantage without proper attention. Pork-growing is a main reliance to pay the rent or the hired hands. Poultry is more plague than profit, and the less care bestowed upon them, the better. We intercede for the "biddies," and beg for them a little of the attention that is lavished upon their more gross and less attractive neighbors. Give them a fair trial, and they will pay any farmer for his care much better than pigs, and will supply his table with greater luxuries, and at a cheaper rate. And to establish this position, we will tell you a tale, quite as literally as some others founded upon fact.

In the year 1850, my poultry yard cost me—

In stock, - - - -	\$39 96
In food for fowls, - - -	39 81
Total, - - - -	\$79 77
It produced in eggs, - -	\$34 92
" in manure, - -	5 00
In stock at close of year, -	50 00
Total, - - - -	\$89 92
Deduct expense, - - -	79 77
Profit, - - - -	\$10 15

It produced above this profit, 91 chickens and fowls, weighing about 300 lbs. In other words, the yard paid about 3 cents a

pound for all the poultry used in the family. When did a porker ever pay you for the privilege of eating him? Even Charles Lamb's roast pig will have to knock under to the biddies.

In 1851, my yard cost me—	
In stock, - - - -	\$54 50
In food, - - - -	65 56
Total, - - - -	\$120 06
It produced 268 dozen eggs,	\$48 76
“ 5 loads manure,	5 00
Stock on hand at the close,	113 00
Total, - - - -	\$166 76
Deduct, - - - -	120 06
Profit, - - - -	\$46 70

Besides this profit, it produced sixty-one fowls, weighing about 200 lbs. In other words, it gave twenty-three cents per pound for the privilege of being eaten. Was roast pig ever so gracious as this? We have tried pork-growing for the same two years, and dealt as liberally by the sty as by the poultry-yard, but with a very different result. The account stands thus:—

Bought a pig, May 13, 1850, -	\$4 80
Food, - - - -	15 02
	\$19 82
Deduct for 8 loads manure, -	8 00
	\$11 82

He produced 258 lbs. of pork. Divide the cost by this, and it gives a little over 4½ cents a pound, as the cost of production.

Bought a pig June 13, 1851, -	\$4 95
Food, &c., - - - -	13 56
	\$18 51
Deduct 8 loads manure, -	8 00
	\$10 51

He produced 206 lbs. of pork. Divide the cost by this, and it gives a little over five cents per lb. as the cost of production.

He must be a very skilful farmer who can produce pork for four or five cents a pound. Most of the pork made in New-England costs six or seven cents, the full market price; so that there is no advantage in producing it, except as it makes a valuable manure upon the farm. The farmer who can make pork for nothing, or, what is better, can make it pay him thrice its market value for being eaten, is a man yet to be heard from. The best husbandry will

probably never be able to accomplish this with any breed of pigs.

But the fowls will pay their own way, with proper care, and will give you a certain amount of poultry without other cost than your own trouble in rearing them. Each hen, well cared for, will yield a clear profit of at least \$1, or, in other words, will give you eight pounds of poultry for nothing.

We say, then, especially to the boys, take care of the “biddies.” Let them have a warm place for a roost, a dry cellar, if possible, in winter, a variety of grain and a little animal food, clean water to drink, and lime in some shape, for egg-shells. Take care of the fowls, and they will take care of you.—W. C., *Stonington, Conn., Dec. 31, 1851.*

STABLING MILCH COWS, &c.—Good stables are good things; but it does seem that sheds might be arranged in such a manner that cows would do as well in them, in the winter season, as they would, were they to be stabled in dirty stalls. No one can disacknowledge the fact but what it requires a great deal of hard labor, in the course of the winter and spring, to clean out and supply stables with bedding, &c. Where sheds are commodiously arranged, and built in a way so that the cold winds will be broken off, and abundantly strewn with straw, cattle cannot help doing well, if provided with enough hay, &c. To tell our own experience: we have tried stabling cattle for several years, and continue to do so yet, but have come to the conclusion, from observation, &c., that those cattle which run in the yards, around the straw stacks, and in the sheds, do as well, if not better, than those which we stable. Our sheds are comfortably arranged as well as the yards, and the stables are built on a principle or plan which cannot but suit the taste of every lover of nicely regulated stalls. No tying with ropes is required; all that is necessary is to open the doors, (for every stall, five by eight, has a door,) and let the cattle or cows pass right in, without interruption, putting their heads directly through a two-feet hole at the upper end of the stable, and the eating process is commenced immediately. Stalls built in this manner, with an alley three or four feet wide in front of the cattle, for the purpose of convenience in feeding, &c., are adapted to the wants of farmers and cows as well as any I have ever seen or examined. Of course the hay is kept above the stables, and is thrown down through convenient-sized holes into the alley.

But, notwithstanding the convenience and warmth of such stalls, I cannot fall in with the idea that they are better adapted to

promote the thrift, growth, &c., of cattle, than good, nice, snug and convenient sheds. It does not require any more labor to strew a shed that will accommodate a dozen cows with straw, than it does to litter eight or nine stables. Cattle, like men, should breathe pure air, and not be confined to tight stalls, where they will be under the necessity of inhaling atmosphere that has been used three or four times over. I do not wish to be considered *ultra* in expressing my views in relation to stables, but would simply state that from experience, observation, trial, and the like, I have adopted the idea that cattle do fully as well, and, I am of opinion, better, in comfortable sheds and yards, with the same feed and care, than they do when shut up in stables.

It may be said that stabling cows has a tendency to increase their milk. There may be some truth in this; but it must be kept in mind that cows that are stabled generally have better care, and are better attended, than those which run out. When cows are stalled, they usually get slop, corn, and things of that nature; whereas those that live an out-door life do not in many instances get these things; and hence the reason why cows running in yards or sheds do not give as much milk as those that are stabled.—W. TAPPEN, *Baldwinsville, N. Y.*, Jan., 1852.

THE BEST METHOD OF CURING BUTTER.—As soon as the butter has been sufficiently churned to cause it to separate from the buttermilk, and collect into a mass by itself, take it from the churn and work it well in a sweet wooden vessel, with a spatula or spoon of close-grained wood, (both having previously been thoroughly scalded in boiling water,) until quite free from the buttermilk; then add about half an ounce of the best blown or ground rock-salt to each pound of butter, working it well into the mass; after which leave it in a cool place twenty-four hours, or longer if necessary, and work it again until entirely free from the buttermilk, and add to each pound half an ounce of the following preparation, viz.: one pound of salt, eight ounces of loaf-sugar, and half an ounce of saltpetre, well pulverized, and mixed together. To each pound of butter add half an ounce of the mixture, and incorporate it thoroughly with the butter, (adding in addition a small quantity of best table salt, if desired to suit the taste,) and pack it closely in layers in stone jars or sweet wooden tubs, using a small quantity of the preparation between each layer of the butter. It is usual to put a layer of salt or a quantity of brine on the top layer, for the purpose of keeping it sweet; but this is attended with a loss of flavor, and frequent-

ly renders the first slice unfit for table use. All that is necessary effectually to preserve it, is to prepare a *double* cover of thin muslin, carefully fitted to the shape and size of the jar or tub, between the folds of which stitch loosely a layer of the above mixture, and keep it spread evenly over the surface of the butter. This is much more convenient and effective than the usual method.

A LIVELY TRADE.—From the recent report of the Methodist Book Concern in New-York, it appears that the sales for the last twelve months were more than \$200,000, being an increase of \$65,000 over the previous year, and exceeding all former years. The profits on the new Hymn Book were \$47,561. The Christian Advocate and Journal has a circulation of from 25,000 to 29,000; the Missionary Advocate, 20,000; the Sunday-school Advocate, 65,000; with a yearly sale of Sunday-school books amounting to \$5000. The Quarterly Review has 3000 subscribers.

TO BAKE APPLES.—Sweet apples, properly baked and eaten with milk, are excellent. The best method of baking tart apples is to take the fairest and largest in size, wipe them clean, if thin-skinned, and pare them, if the skin is thick and tough; cut the largest portion of the core from one end, and place the fruit on well-glazed earthen dishes or pans, with the end which has been cored upward, and fill the cavity with refined powdered sugar. Then place them in the oven or other apparatus for baking until sufficiently cooked. Take them out, and when cold they are perfectly delicious.

VIRGINIA EGG BREAD.—Dissolve one tablespoonful of butter in three and a half pints of milk; add one quart of Indian meal, half a pint of wheat flour, a little salt, and two eggs well beaten; mix all well together, and bake in a buttered tin.

MINUTE PUDDING.—Put a pint and a half of milk on the fire; mix five large spoonfuls of flour with half a pint of milk, a little salt and nutmeg. When the milk boils, stir in the mixed flour and milk. Let the whole boil for one minute, stirring it constantly. Take it from the fire; let it sit till luke-warm; then add three beaten eggs. Let it bake on the fire, and stir it constantly until it thickens. Take it from the fire as soon as it boils. To be eaten with nice sauce.¹

APPLE BREAD.—Take two parts of flour to one part of apples, stewed; stir them quite warm into the flour; put in a little yeast; knead it without water, the fruit

being quite sufficient. Let it remain in the pan to rise for twelve hours; then put it into small pans and bake it. It makes very light and palatable bread.

WATER FOR CATTLE.—Few persons are aware how important an item in cattle-husbandry it is for animals to be able to procure pure water when they need it. This applies to all seasons, and particularly in winter, when they are subsisting on dry food. Animals, when water is not convenient, or situated in bad icy holes, or a great way off, will only resort to it when in extremity; and then they overload the stomach, prostrating the whole viscera of the digestive organs with an immense amount of a cold fluid, that will require the entire nutritive means of one feeding to create animal heat sufficient for the ice in their bellies.

TO PREVENT BOTS IN HORSES.—A person of much experience in veterinary science is never troubled with this disease in his horses. His simple practice during the fall months is, to keep a greasy cloth in the stable, and once a week rub with it such parts of the animals as may have been attacked by the nit-fly. Grease destroys and prevents the eggs from hatching.

STRAINED OIL FOR SUMMER OR WINTER USE.—To have sperm oil always of a good quality and invariably to burn well, it requires only to be pressed or strained at a temperature *just at or a little below that at which it is to be burned*. That strained in summer is only fit for summer use, as it will always chill in winter, and that intended for winter use should always be pressed at the lowest temperature. Let this rule be observed, and there would never be any complaint of lamps "gumming," as it is

generally termed. The grossest imposition is very frequently practised in the manufacture and sale of oils, purporting to be genuine *sperm*, which are nothing more or less than the common "blackfish" or "blubber" oils, bleached and clarified for that purpose. In nothing, perhaps, greater caution is requisite than in the purchase of oil for burning.

A GOOD MOTIVE.—Rev. Mr. Cliff, in speaking of the article over his signature in the present number, remarks: "I have taken to writing for agricultural journals strictly in the exercise of my professional calling, and to gain certain moral and religious ends to which the clergy are particularly consecrated. I regard scientific agriculture as intimately connected with the salvation of our rural parishes, and hope to succeed, in my own neighborhood at least, in awakening attention to the fact. I think the views advanced in my article are calculated to awaken interest in agriculture where little interest in the subject has been felt, and to bring a new and powerful class of motives to bear upon the advancement of agricultural science among us."

GLASS FACINGS FOR BUILDINGS.—A correspondent of the London Builder suggests the substitution of glass for the stone facings of buildings; not translucent or crystal glass, but glass ground of the requisite thickness and strength. Such a material, he adds, would not absorb the dust and smoke constantly floating in the air; but every shower would wash them off, and buildings would look as fresh and new as ever. And as glass, from recent improvements, can be moulded to any shape, almost as perfectly as if cut, the most exquisite Gothic and other ornaments could be produced.

TOPICS OF THE PRESS.

VEGETABLE MONSTER.—Mr. Joseph Pearson, of Newton township, in this county, says the Troy (O.) Times, has placed upon our table a vegetable curiosity, in the shape of a monster potato. The sample before us is of the Merino kind, and when first dug, weighed three and three quarter pounds. The curiosity is more in the shape that this vegetable has grown, than in the weight or size it has attained. There is a main branch about nine inches in length, and from this, six potatoes of fair proportions, varying from seven to three inches in length, have shot out. Each could be so separated as to retain a good shape without marring

any. The seven would be ample for a Sunday dinner for a small family, and all these have grown together from one fibre or root. There is one peculiarity about the Merino potato, which we believe is not possessed by any other species grown among us, and that is, their incapability to adulterate with others planted about them. Mr. Pearson informs us that he has cultivated this species of potato for more than thirty years, and in that time has discovered no adulteration whatever. The good qualities of these potatoes are found to be in the sureness of the crop, and the great amount of yield per acre. They do not attain their full ex-

cellence for the table use before spring and summer, when they are found to have few if any equals. We invite the attention of our farmer friends to this specimen presented us.

WATERS OF THE DEAD SEA.—About a dozen analyses of the waters of the Dead Sea are on record. The first was made by Professor Gmelin, of Tubingen, and reported in Poggendorff's Journal in 1827. The second was made by R. P. F. Marchand, of water brought to Berlin by Kunowski, in 1849. The third by Messrs. Herapath, of London, of water obtained by C. J. Monk, in March, 1850. The last is an approximate analysis by the younger Professor Siliman. As useful references, we append a table of these analyses:—

	<i>Gmelin.</i>	<i>Marchand.</i>	<i>Herapath.</i>
Chloride of Sodium,....	7.078	6.578	12.110
Chloride of Magnesium,11.773		10.543	7.822
Chloride of Calcium,...	3.214	2.894	2.455
Chloride of Potassium, 1.674		1.398	1.217
Chloride of Manganese, .212			.006
Chloride of Iron,.....			.503
Chloride of Aluminum, .090		.018	.056
Chloride of Ammonium, .007			.006
Bromide of Magnesium, .439		.251	.251
Sulphate of Lime,.....	.053	.088	.068
Silica,.....		.003	traces
Nitrogenous organic matter,.....			.062
	25.540	21.773	24.056
Water,.....	75.460	78.271	75.952
	100.000	100.044	100.003
<i>B. Siliman, Jr.</i>			
Water,.....			82.139
Chlorine,.....			10.290
Bromine,.....			.684
Sulphuric Acid,.....			trace
Magnesia,.....			2.355
Soda and trace of Potash,.....			3.008
Lime,.....			1.424
			99,900

AN EXCELLENT METHOD OF PRESERVING HAMS.—One of the most effectual methods of preserving hams is to place them in good sweet pickle made from pure rock-salt, with the addition of a pound of clean sugar for every peck of salt used. When sufficiently salted, take them out on a dry, cool day, if possible, and sprinkle them thoroughly with clean, dry, hickory wood-ashes. Hang them up as high in the smoke-house as possible, and smoke them with cool smoke made from hickory wood or corn-cobs. When sufficiently smoked, take down the meat, (always before the skipper-fly makes its appearance,) and pack it perfectly dry in casks, in the following manner: First put a layer of hams in perfectly clean, dry, hickory ashes, filling closely every crevice about the hams, and then a course of corn-cobs broken small, (or, if ground, it would be bet-

ter,) and so on, alternately a layer of hams in ashes and one of cobs, until the cask is filled; then cover or head it up tight, and keep it in a dry, cool place. Hams cured and preserved in this way will be perfectly sweet and good for two or three years.

LONG ISLAND COTTON.—It has not been known until within a very short time that cotton could be raised at all in this part of the country; but this season, cotton equal to the best Sea Island has been raised on Long Island, by Mr. A. P. Ricker, of Newtown, and it is believed that it can be made a profitable crop by a little attention. Tobacco has also been raised on the island with satisfactory results, and it is not among the impossibilities that this section of our State may, eventually, furnish large quantities of these articles for the market. Mr. Ricker intends, another season, we understand, to make quite a crop of cotton and tobacco.

NEW-YORK CATTLE TRADE FOR 1851.—We present below (says the *New-York Times*) our regular annual statement of cattle, at this market, by far the the most important mart of the kind in this country. It is proper to state here that it is difficult to ascertain, with precision, the exact amount of cattle sold yearly, at the various droves-yards within the limits of the city; but it is believed that the figures in the main are essentially correct.

The largest number of beeves is sold at the Washington Drove-Yard, Forty-fourth street and Fourth Avenue; and next to that, Chamberlain's, "down town," Bull's Head, in Robinson street, does the most extensive business. Independently of these, however, there are large numbers of cattle disposed of elsewhere throughout the city and at the boats, which are never taken into account. There are also many beeves slaughtered up the North River, and brought down dressed to our city markets. A careful estimate, with the data before us, would put down the aggregate number of beef cattle annually consumed in this city at about 120,000 head.

The principal market for the sale of cows and calves, and sheep and lambs, is at George Browning's Bull's Head, in Sixth street, near the Third Avenue, and next to that in importance, at the Hudson River (Chamberlain's.) Many small sales, however, are made at the wharves as above, on the North River of this city.

The market-days now are Mondays and Thursdays. About 400 beef cattle, on an average, are driven to this city weekly from Philadelphia. There are also occa-

sional shipments to Bermuda, to supply the British naval contract.

STOCK OFFERED MONTHLY.

	Beeves.	Cows and Calves.	Sheep and Lambs.
January,.....	6,550	341	26,250
February,.....	6,600	260	25,550
March,.....	5,875	485	21,350
April,.....	5,800	410	10,000
May,.....	6,850	570	15,100
June,.....	6,500	600	19,000
July,.....	7,300	530	18,000
August,.....	11,000	515	80,650
September,.....	9,000	425	29,600
October,.....	8,669	490	23,500
November,.....	8,050	375	25,600
December,.....	6,800	453	27,600
Total,.....	88,994	5,466	264,200

MONTHLY AVERAGE OF PRICES.

	Beeves.	Cows and Calves.	Sheep and Lambs.
January,....	\$5 50a\$8 00	\$20a\$40 00	\$2 00a\$5 00
February,....	6 00a\$8 50	22a\$42 00	2 00a\$5 00
March,.....	6 00a\$8 50	25a\$40 00	2 25a\$6 50
April,.....	6 00a\$9 00	20a\$41 50	3 00a\$7 00
May,.....	7 00a\$9 00	20a\$42 00	2 25a\$4 25
June,.....	6 00a\$8 00	20a\$45 00	1 64a\$4 00
July,.....	6 00a\$8 00	20a\$44 00	1 75a\$4 25
August,.....	6 00a\$7 25	20a\$43 00	1 50a\$4 50
September,....	6 00a\$7 50	20a\$40 00	1 59a\$4 00
October,....	5 25a\$7 50	24a\$42 50	1 75a\$5 00
November,....	6 00a\$8 00	20a\$48 00	1 30a\$4 00
December,....	8 00a\$8 25	22a\$35 50	1 50a\$7 00

BEEVES ON SALE, 1850.

Statement of beef cattle in the yards of the Washington Drove-Yard, for each month during the year 1850:—

January,.....	7,242
February,.....	5,639
March,.....	4,769
April,.....	6,571
May,.....	6,689
June,.....	7,347
July,.....	7,130
August,.....	7,295
September,.....	8,270
October,.....	8,380
November,.....	7,775
December,.....	6,745
Total,.....	83,835

The Washington Drove-Yard commenced business on the 8th of May, 1848. The number of cattle offered from that time until

1st of January, 1849, was.....	48,204
1st of January, 1850, was.....	78,200
1st of January, 1851, was.....	83,835
1st of January, 1852, was.....	88,934

From the above statement it will be seen that the cattle trade of this city is steadily and progressively increasing. An immense capital is involved in it, amounting to several millions of dollars annually.

PATENT FLAX-PULLER.—The Janesville (Wis.) Badger State says: The only really new thing we saw at the late Fair was a model of a machine invented by S. B. Goss, of Newark, in this county, for harvesting flax.

It seemed so simple in its arrangement, and so easily comprehended, as to leave scarcely a chance to doubt that it must work to the satisfaction of the ingenious inventor. If it meets his expectations, it will pull flax as fast as a horse-power reaper can cut grain—say 20 acres per day—and do it in the most perfect manner. This invention comes opportunely with the late wonderful discoveries in preparing the flax fibre for manufactories; and those who can remember the back-aching work of flax-pulling, will call him blessed. We shall watch the progress of this machine with interest.

LARGE RYE.—We were presented last week, says the N. C. Star, by Dr. Sills, of Nash county, with a sample of rye, which he has been raising two or three years, which excels any specimens of that grain we have ever seen. It is larger than wheat, and so much resembles it in color, that it would be taken for that grain, but for the peculiar shape of the rye, which it retains. It was brought from Georgia, and is evidently a distinct variety. It is not only remarkable for size, but for the abundance of yield. A gentleman in Franklin, we learn, raised last season six bushels from a peck. It does best on a rich soil, like most other productions of the earth; and not being so hardy as the common rye, the best time to sow it, in this climate, is about the middle of February. We presume Dr. Sills would furnish any of our farmers, who may desire to try it, with seed.

SINKING OF A TENNESSEE MOUNTAIN.—

It is stated that a few days ago, a portion of Walden's Ridge sunk, with a noise resembling deep-toned thunder, leaving a huge gap in the timber that fringes the sides of the ridge, extending about two miles in a parallel direction with the top. The gap in the dense timber appeared to be about sixty or a hundred feet in width, and the fissure in the earth reached to an unknown depth, in which trees of the largest size were torn up, and enormous rocks, which had probably lain concealed for ages, were rent from their primitive beddings and laid bare. The foundation on which the mountain rests is supposed to have given way.

HENS IN WINTER.—A shed behind your horse-stable is the most favorable place for hens during the winter. You can throw the manure from the stalls into it; and as horse-dung, especially where the animals are grain-fed, ferments rapidly and powerfully, its heat will conduce to keep up a genial and summer-like temperature, highly advantageous to the fowls. By sprinkling sulphuric acid freely over the surface every few days, all the unpleasant and deleterious

consequences resulting from the ammoniacal gas evolved by the manure are neutralized and saved for the benefit of the crops. Another important advantage attending this practice, is the saving effected by the economization of the grain contained in the excrement.

STATISTICS OF MANUFACTURES.—From a Washington correspondent, says the *Journal of Commerce*, we have received the following statement of the results of the census of 1850, as it respects manufactures:

AGGREGATE OF MANUFACTURES.

Capital invested in manufactures, June 1, 1850,.....	\$530,000,000
Raw material consumed,....	550,000,000
Amount paid for labor,....	240,000,000
Value of manufactured articles,.....	1,020,000,000
No. of persons employed, ..	1,050,000

COTTON GOODS.

Capital invested in manufacture, ...	\$74,500,000
Raw material used,.....	35,000,000
Value of manufactures,....	61,000,000
Paid for labor,.....	18,000,000
Hands employed,.....	92,286

PIG IRON.

Capital invested in manufacture, ...	\$17,348,000
Raw material consumed,....	7,000,000
Cost of labor,.....	5,066,000
Value of products,.....	12,740,000
Hands employed,.....	20,458

CAST IRON.

Capital invested in manufacture, ...	\$17,456,000
Raw material,.....	10,346,000
Labor,.....	7,000,000
Value of product,.....	25,000,000
Number of hands,.....	20,507

TO BOIL POTATOES MEALY.—When the water nearly boils, pour it out and put in cold salted water; it makes them mealy without cracking them.

A BEAR CAPTURED BY CHLOROFORM.—A newspaper published at Montauban, Spain, gives an account of the capture of a huge bear by chloroform, which is somewhat amusing. His bearship had for a long time been the terror of the district, entirely defying all attempts at capture. Even the most daring hunters dared not approach him sufficiently near to give him a death-wound, and so the bear was left to his glory, making predatory excursions continually among the sheep and cattle of the surrounding farms. At length a Doctor Pegot hit upon a plan for securing the monster by the use of chloroform. Early one morning he

proceeded to the cave where the bear slept, accompanied by a party of peasants; and having made sure by the snow just fallen that the animal was within, the peasants ran up and fastened up the entrance with iron bars, which prevented the bear from coming out. Over the bars they stretched blankets to prevent the ingress of air, and now, all being ready, the operation of putting Monsieur le Bear under the influence of chloroform commenced. The Doctor took a large syringe, and, having filled it with the somnolent liquid, discharged it, through an aperture in the blanket, into the interior of the cave. This being several times repeated, the bear soon fell into a deep sleep; when the Doctor marched in and secured his prize in triumph. They bore the poor bear away, tied limb and limb; keeping a cloth saturated with chloroform constantly at his nose; and took him to the village, where, a cage having been prepared, the bear was permitted to awake. Great excitement followed all around as the news of the capture of the wild beast became known, and crowds came to behold him, secured in his cage. In the evening, the village was illuminated in rejoicing, while the praises of science and Dr. Pegot fell from every lip. This is the first instance of the capture of a wild animal by chloroform.

MANURING FRUIT TREES.—This is the season, remarks the *Horticulturist*, for the amateur to look over his fruit trees, especially those which have failed to produce good crops for want of nourishment in the soil. Carefully open a trench at the very ends of the roots; throw out a third of the poorest of the soil, and replace it with a mixture of manure and ashes. I use a cart-load of barn-yard manure—no matter if it is fresh—to a bushel of ashes, and I find it never to fail in bringing up the tree. If I wait till spring before I apply this stimulus, I find it to do just half as much good as if I put it in the soil in October and November. It is quite surprising how old fruit trees can be brought to by this simple dressing, barn-yard manure and ashes, applied in the fall of the year.

PERPETUAL MOTION.—The *Redland* (Texas) *Herald* remarks: "As incredible as it may appear to many, the secret of perpetual motion has really been discovered by three young men of our county, by the name of Force. They are now in Washington city, applying for a patent, and they write back that there is no doubt of success. The principle upon which the machinery is propelled, is the pressure of atmospheric air upon a succession of vacuums. They have been offered in Washington \$50,000 for the patent right for the State of New-York."

EDITORIAL AND SELECTED MISCELLANY.

MR. J. WINSLAR AYER, of Boston, is appointed to make a geological survey of the coal-fields which are said to exist in the neighborhood of St. John, N. B. . . . BIRDS of Paradise always fly against the wind, and heavenly-minded souls move against the current. . . . In one of the Unitarian societies in Boston, there are ten gentlemen who are unitedly worth more than ten millions of dollars. . . . A SUPPLY of New-England ice has been secured to San Francisco and Sacramento City, through the enterprise of the Boston and California Ice Company. . . . ACCOUNTS to the end of August state that the unusually warm weather had hastened the ripening of the fruit at Malaga, which was coming in earlier than had been expected. . . . A MIND properly constituted can accommodate itself to whatever pillows the vicissitudes of fortune may place under it. . . . A FINE bronze equestrian statue of Bernadotte is about to be erected at Stockholm by the inhabitants. The model is by Fagelberg, now at Rome. The statue will be cast at Munich. . . . THE people of Quebec talk about a line of steamers from there to Liverpool. . . . NINETY-FIVE thousand dollars have been subscribed in Ohio for a Farmers' College. . . . THE Grand Jury have indicted twenty-five of the slave-rioters at Syracuse, including some of the prominent citizens of the place. . . . A NEW cotton factory, recently erected at Reading, Pa., by Senator James, of Rhode Island, has been put into operation. . . . WE regret to learn that Mr. Clay still continues in a very delicate state of health, and that his friends despair of his recovery. . . . THE severity of the season has interfered sadly with travel in all parts of the Northern and Middle States. Besides the Delaware, the Susquehanna, the Potomac, and other streams to the south of that parallel, have been entirely closed or greatly obstructed with ice. . . . IN Indiana there are now 450 miles of railroad completed and run over by daily trains. There are 1020 miles under construction. . . . THE *Scientific American* states that "if, at two feet above the throat of your chimney, you enlarge the opening to double the size for a space of two feet, then carry up the rest as at the first, your chimney will never smoke." . . . THE cars on the Ohio and Pennsylvania Railroad run now from Cleveland to Pittsburg in twelve hours. What a change! A few years ago, people took nearly as many days to go from the one place to the other. . . . WE see it stated in the Western papers that Dr. Kinkel has collected the sum of \$30,000 among the Germans of the West, to aid in regenerating Germany. . . . SNOW fell at Charleston and Savannah on the 18th of Dec. This is said to be the first snow in that region for more than twenty years. . . . THE Imperial Palace at Delhi, with its subordinate buildings, is two miles long. The largest crystal in the world is in this palace. It is four feet long, two and a half feet broad, and one foot thick, and is very transparent. . . . HON. JOEL R. POINSETT died at his residence in Statesburg, South Carolina, on Friday, Dec. 12, at the venerable age of seventy-three years. . . . THE passage across the East river, New-York, has not been so impeded for the last four years as it was the past month by floating ice. . . . JENNY LIND has received intelligence of her mother's death in Sweden in October last, in consequence of which mournful news she will close her concerts in the United States at once. . . . It is proposed to raise, by subscription, a monument of the purest Parian marble to the memory of the little school-children who perished at the New-York school catastrophe. . . . THE coffee tree is from six to ten feet high; begins to bear the second or third year, and remains fruitful ten years. . . . FREDERIKA BREMER arrived at Stockholm on the 22d November last, in season to be present at the funeral of her elder sister, Miss Marie Bremer, from whom she inherits a very large fortune. . . . ONE of the Philadelphia ferry-boats, running to Camden, was nineteen hours crossing the river on Sunday, 20th Dec., the stream was so full of ice. . . . DATES from Jamaica to the 20th Dec., report that the cholera

was extending its ravages in many parts of the island. . . . THE second track of the New-York and New-Haven Railroad is finished from New-Haven to Fairfield. . . . AN American merchant, resident in Paris, who was at his office during the recent *emeute*, had to creep on his hands and knees for the distance of two blocks, to escape being shot. The balls of the contending parties flew over his head and struck against the walls. . . . THE Erie Railroad Company is about to fund a new floating debt of three million dollars, by an auction sale, at 7 per cent. . . . DR. COGSWELL, the superintendent of the Astor Library, has returned from his foreign tour, after having purchased thirty thousand volumes of the most rare and valuable works. . . . THE magnetic telegraph wires have been laid across the bed of the Mississippi river, opposite St. Louis, insulated in a thick casing of lead pipe. . . . A REPORT of roads in Kentucky reads thus:—"No gravel or macadamized road is fit for use until it is firmly cemented by continual travel." . . . THE unusual height to which the Nile has risen this year has caused a great deal of damage in the country, and some of the next year's crop will suffer considerably from it. In some places the embankments have given way, and whole villages have been destroyed by the flood. . . . At a concert recently, at the conclusion of the song, "There's a good time coming," a country farmer got up and exclaimed, "Mister, you could n't fix the date, could you?" . . . MORE whisky is exported from Cincinnati than from any other port in the Union. . . . IN Wisconsin, within a circle of some thirty or forty miles diameter, there is a Norwegian colony settled, of 15,000 souls or more, and a church of over 100 has just been formed among them. . . . A BOOK and print seller at Pesth has been arrested, and sentenced to eight days' imprisonment, for having in his possession portraits of revolutionary personages. . . . SEVERAL applications have been made to the Auditor of the State of Illinois for authority to do a banking business under the law recently approved by the people of the State. . . . COAL, of good quality, has been discovered in the Stack House Mountain, in Hampshire county, Virginia. . . . A MESSAGE from Paris to England, and an answer returned, in a minute and a half, was lately achieved by the submarine telegraph. . . . THE average annual expense to each church-goer in Russia is seven and a half cents; in Italy, twenty cents; in the United States, seventeen and a half cents; in Catholic Austria and Protestant Prussia, twenty-five cents; in Spain and Portugal, fifty cents; while in England the average expense is seven dollars twenty-seven cents! . . . PLATO, speaking of passionate persons, says: "They are like men who stand on their heads; they see all things the wrong way." . . . THE *Minden Herald* says that in Claiborne and Bossier parishes the cotton crop will probably be twice as heavy as was anticipated a few months ago, the second crop having generally thoroughly matured. . . . BOSTON, in England, has presented Boston, in the United States, with some seals and documents—an act of courtesy that has been courteously acknowledged by the latter. . . . EXCAVATIONS near Malton, England, in the course of the construction of the Thirsk and Malton railway, have disclosed several antiquities of interest. The sites of British and Roman encampments; the foundations of ancient buildings; two human skeletons, one of them in good preservation, the other very much decayed; a funeral-urn; and various coins of Vespasian, Domitian, Constantine, and Aurelian, are among the interesting discoveries which have been made. . . . At all seasons of the year, cattle should have salt and ashes given to them. Especially is this necessary during those periods when they are confined to green and fermentable food, which induces flatulency. . . . THE *London Literary Gazette* says it is a curious fact that several able botanists explored and resided in the gold regions of California, aware of the indications of the precious metal, before the rush to the "diggings," but "were too absorbed in the delights of their own peculiar pursuits to think of grubbing for lucre." . . . It is said that if horses are liberally supplied with salt and clean wood-ashes, they will neither be troubled with bots nor colic. . . . PASSION makes them fools which otherwise are not so, and shows them to be fools which are so.

The Plough, the Loom, and the Anvil.

VOL. IV.

FEBRUARY, 1852.

No. 8.

THE PROSPECT FOR 1852.

If we would enable ourselves to understand and anticipate the future, we must study the past. Similar causes tend always to produce similar effects. Six years have now elapsed since the aid of the whole agricultural interest of the country was invoked to procure the abolition of the system of 1842, under which the consumer was every where throughout the country being brought to take his place by the side of the producer; and it can scarcely be deemed amiss now to review the arguments then used with a view to secure that aid, and to examine the results thus far obtained, with a view to understand what is the prospect for the future. With a view so to do, we now give the reader the following extract from the Treasury Report for 1845:—

"We have more fertile lands than any other nation, can raise a greater variety of products, and, it may be said, could feed and clothe the people of nearly all the world. The home market, of itself, is wholly inadequate for such products. They must have the foreign market, or a large surplus, accompanied by great depression in price, must be the result. The States of Ohio, Indiana, and Illinois, if cultivated to their fullest extent, could of themselves raise more than sufficient food to supply the entire home market."

* * * * *

"Such is the rigor of our restrictions, that nothing short of a famine opens freely the ports of Europe for our breadstuffs. Agriculture is our chief employment; it is best adapted to our situation; and if not depressed by the tariff, would be the most profitable. We can raise a larger surplus of breadstuffs, and a greater variety, and at cheaper rates, than almost any other nation. Remove, then, from agriculture all restrictions, and by its own unfettered power it will break down all foreign restrictions, and, once being removed, would feed the hungry and clothe the poor of our fellow-men throughout all the densely peopled nations of the world. But now we will take nothing in exchange for those products but specie, except at very high duties; and nothing but a famine breaks down all foreign restrictions, and opens for a time the ports of Europe for our breadstuffs."

The home market, we were then assured, was "totally inadequate" for the products of agriculture, which was, and should be, our chief employment; and by devoting ourselves more exclusively to it, we could, as we were told, "feed the hungry and clothe the poor" of the world. What, however, is the object of commerce? Is it not an exchange of equivalents? If so, what is the benefit to be derived from trading with people who are hungry and naked because of inability to produce food or the materials of clothing? None, assuredly! The shopkeeper prefers to trade with people who produce largely, and have therefore much to give in exchange for what they need to buy; and in proportion to the extent of their production, he grows rich; while precisely as their production diminishes, does his business decrease, and does he grow poor. If he desired only to "feed the hungry and clothe the naked," he would prefer to trade with the occupants of alms-houses; and the larger his trade with them in the first year, the smaller would it be in the second and

third, until at length he would become bankrupt. So precisely must it be with a nation; for the laws which influence, and should influence, the proceedings of an individual, are precisely the same as those which should influence those of a community. The object of the tariff of 1842 was that of promoting exchanges between our own citizens, who are the largest producers of the world, and are so because they exercise the largest amount of self-government, or individuality, and therefore most readily combine their efforts for the increase of their productive power; and the effect of that policy was seen in the fact, that the quantity of iron produced at home, to give in exchange for food and clothing, rose, in the brief period of its existence, from 200,000 to 850,000 tons; the quantity of railroad iron, from nothing to 100,000 tons; the quantity of cotton cloth, from 267,000 to 500,000 bales; the quantity of woolen cloth, from 55,000,000 to 80,000,000 pounds; the quantity of coal, from 1,100,000 to 3,000,000 of tons; the quantity of lead, from 585,000 to 787,000 pigs; and manufactures of all descriptions in proportion.

All these commodities required to be exchanged. And for what? The miner of ore and of fuel required food, and clothing, and house-room. The furnace-man and the mill-operative, the man who quarried the stone for the furnace and the mill, the wood-cutter and the sawyer who got out the lumber, and the carpenter who prepared it, and the machinist who wrought upon the engine, the spindle and the loom, required the same; and thus the *whole value* of this vast increase in the product of iron, lead, fuel, and cotton and woolen cloth, went to swell the demand for the raw products of the earth; and that increase, in the four years of the tariff of 1842, exceeded one hundred millions of dollars, four fifths of which were expended for food alone. This, however, was but a part of the effects produced by the adoption of the system which looked to making a market on the land for the products of the land. Every man must be fed; and if he cannot obtain food in exchange for labor given to the making of iron or cloth, he must raise it for himself; and instead of being a customer to the farmer, he must become a rival to him. The labor that, under the tariff of 1842, was given to producing commodities to be given in exchange for food, must, without that tariff, have been given to the production of food, by which to swell the surplus, and thus diminish the price; and such had been the effect of the compromise tariff, which had closed the great domestic market for produce while increasing the number of producers. This erroneous state of things, which it had required years to bring about, required years to correct; and therefore it was that the prices of food were low in the early years of the new system. The correction was, however, being gradually made; and long before this time, the domestic market would so have grown as to have rendered our farmers independent of the course of things in Europe. It was not, however, so ordained. The domestic market was to be prostrated, and the farmers were induced to aid in its prostration, and the tariff of 1846 became the law of the land. What were the anticipations of its author, in regard to its effects, may now be seen by a perusal of the following extract from his Report of 1846:—

"Experience is against the protective policy. . . . From a long peace, Europe is becoming so densely populated that her poorer and more uncertain climate affords a less adequate supply of food from year to year for her rapidly increasing population. Under a system of low duties, and a reciprocal interchange of commodities, it will be the interest not only of Great Britain, but also of most of the Continent of Europe, to take a large supply of food from us; but by arresting this exchange of their fabrics for our products, it becomes their interest, and in fact a necessity, to look for and encourage markets else-

where ; and also, by extraordinary means and high government bounties, to drive capital into agriculture there, to supply the wants of their people, unable to purchase our products, for which we demand specie in exchange. If we receive the fabrics of Europe in exchange for our products, it will be to their interest to encourage and enlarge that commerce ; and it must go on rapidly augmenting, until our country becomes the granary of Europe, and our export trade of food shall even exceed that of cotton, great as that is destined to be under a system of low duties."

Our country was to become the granary of Europe; that is to say, of France, which has become the largest exporter of flour to England ; of Germany, Poland, Russia, Spain, and Italy, which have little to export but food, and which must continue to be exporters of it until they shall determine to bring the consumer to the side of the producer, by making a market at home, and thus diminishing their necessity for seeking one abroad. How far this prediction has been realized, may now be seen by the following statement of our exports of food to all the countries of Continental Europe in the years 1849-50, the latest for which we have as yet returns :—

	Wheat.	Flour.	Indian corn.	Indian meal.	Rye meal.	Rye, oats, and other small grain.	Apples.	Potatoes.	Rice.
Russia, . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	\$70,936
Prussia, ...	\$288,	\$ 15	.....	.....	.....	\$10,787	.....	.....	2,325
Sweden and Norway, . . . . .	.....	519	.....	.....	.....	.....	.....	.....	67,517
Denmark, . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	54,340
Hanover, . . . . .	.....	.....	160	.....	.....	.....	.....	.....	.....
Holland, . . . . .	.....	3,789	.....	.....	.....	440	.....	.....	119,026
Spain, . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	438
Portugal, . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	5,243
Italy, . . . . .	.....	.....	.....	.....	.....	.....	.....	.....	.....
France, ...	208	.....	.....	\$4	.....	63	.....	\$51	220,982
Belgium, . . . . .	.....	.....	.....	.....	.....	.....	\$175	.....	205,290
Austria, . . . . .	.....	575	.....	.....	.....	.....	.....	.....	290
Total, ...	\$496	\$4,938	\$160	\$4	.....	\$11,270	\$175	\$51	\$746,097

Such is now, at the end of four years, the market of Continental Europe, of which we were to become the granary, and thus to feed the hungry and clothe the naked of those countries! The whole anticipation was simply absurd and ridiculous, and the publication of it was evidence of the writer's entire want of knowledge of the true principles of commerce. He knew well that the growers of wheat, or of cotton, within the Union, did not need to exchange with each other ; and yet he looked to establishing between the producers of food in America, and the producers of food in Europe, a system of exchanges so vast, that in a little time our exports of food should exceed those of cotton, great as the latter were "destined to be under a system of low duties." It seems, however, never once to have occurred to him to inquire what those people—poor and hungry people—were to produce, to give in exchange for all the food and all the cotton we were to export. Most of the nations of the continent have but few manufactures ; and among them all there is not a single one that is not an exporter of raw produce, except those which have adopted protection—to wit, France, Belgium and Germany ; and the whole amount of our exports to them of food, with the exception of rice, which they are unable to produce, and must therefore buy, is under \$12,000 ; and there exists not the slightest probability of an increase ; and that such was the fact, the Secretary should have known.

The only manufacturing country in the world that habitually imports food is Great Britain and Ireland ; and it was with a view to secure to ourselves the supply of that country, that the tariff of 1846 was passed. What

were the anticipations in relation to the growth of that market, will be seen on a perusal of the following extract from the Report of 1847:—

"It is not the freight, then, that created the chief obstacle to the interchange of products between ourselves and foreign countries, but the duties. When we reflect, also, that the exchange of products depends chiefly upon diversity, which is greater between our own country and the rest of the world, than between the different States of the Union, under a system of reciprocal free trade with all the world, the augmentation arising from greater diversity of products would equal the diminution caused by freight. Thus the Southern States exchange no cotton with each other, nor the Western States flour, nor the manufacturing States light fabrics. Diversity of products is essential to exchanges; and if *England and America were united by absolute free trade, the reciprocal exchanges between them would soon far exceed the whole foreign commerce of both; and with reciprocal free trade with all nations, our own country, with its pre-eminent advantages, would measure its annual trade in imports and exports by thousands of millions of dollars.*

"In my last annual report, and that which preceded it, it was proved that the home market was wholly inadequate for our vast agricultural products. We have long had, for grain and provisions, the undivided markets of our own people. But these are not sufficient; and in a single year we have, with abundance of food retained at home, supplied the world with an addition at once during the last year, as shown by table AA, of \$41,332,282 in value of breadstuffs and provisions, bringing the value exported that year up to \$65,906,273. Our manufacturers could not have consumed this surplus, or their non-consuming machines, which are substituted in their workshops for the labor of man. If the energy of our own people can add \$41,332,282 to the export and supply of our breadstuffs and provisions in a single year, what could they not add to such products if they enjoyed free of duty the markets of the world? By table BB, it appears that the augmentation of our domestic exports, exclusive of specie, last year, compared with the preceding, was \$48,856,802, or upwards of 48 per cent.; and at the same rate per cent. per annum of augmentation, would amount in 1849, per table CC, to \$329,959,993, or much greater than the domestic exports from State to State. The future per centage of increase may not be so great; but our capacity for such increased production is proved to exist, and that we could furnish these exports far above the domestic demand, if they could be exchanged free of duty in the ports of all nations."

How far the results have corresponded with these sanguine anticipations, will now be shown.

The export of food of all descriptions to Great Britain and Ireland, in the year 1845-6, under the tariff of 1842, when the domestic market was so rapidly increasing, amounted to \$10,392,239. In the following year—that of the famine in Ireland—it rose to the large sum of \$27,843,150, thus proving that the vast increase of domestic consumption, and diminution of necessity for resorting to foreign markets, had been attended with no diminution of power to avail ourselves of them when prices were sufficiently high to make it advantageous so to do.

From that time to the present, we have had in operation the tariff of 1846, under which the mills and furnaces of the country have been in a course of being gradually closed, and the whole growth of population driven to seek agriculture as the only means of obtaining employment; and during that period, the following has been the movement in our commerce with that country in reference to *breadstuffs and provisions of all descriptions*:—

1847-8, ...	\$19,538,846
1848-9, ...	23,699,891
1849-50, ...	12,271,063
1850-51, ...	8,104,253

Thus proving that the power to go to foreign markets diminishes as the necessity for so doing increases.

As our readers engaged in the production of the various articles of export may desire to understand how much they, each of them, benefit by the substi-

tution of this foreign market for the great domestic one now being closed, we give the details in the following copy of an official document obtained from the Treasury:—

Export of Breadstuffs and Provisions to England, during the year ending June 30, 1851.

Butter and cheese, ...	\$ 570,686
Pork, bacon and lard, ...	1,361,169
Wheat, ...	634,920
Flour, ...	4,172,882
Indian corn, ...	1,022,143
Indian meal, ...	12,681
Rye, oats, and other small grain and pulse, ...	33,662
Ship bread, ...	1,302
Potatoes, ...	28
Rice, ...	294,580

\$8,104,053

N. SARGENT, Register.

Treasury Department, Register's Office, Dec. 29, 1851.

The producers of butter and cheese obtain a market in Great Britain and Ireland to the extent of little more than \$500,000; and those of Indian corn, and of hogs, to the extent of less than \$2,500,000; and the whole food-producing population obtain a market for \$8,100,000, or less than the consumption furnished by the coal trade of Pennsylvania, *the closing of which alone*—to say nothing of the iron, woolen and cotton trades, so vastly superior in amount—*would be attended with consequences more disastrous to the farmers than the total cessation of the export of food to all Europe:* and yet it was to obtain the market of Great Britain for food, that the farmers of the country were induced to abandon the policy of 1842, that was so rapidly bringing the spindle and the loom, the hammer and the anvil, to take their natural places by the side of the plough and the harrow!

Instead of having become the granary of all Europe, or being in a way so to become, we are now contending with all Europe for the *daily diminishing market of Great Britain*; the consequence of which is, that it is perpetually burdened with a stock so large as to forbid the prospect of a rise in price; and from week to week we are informed that "beef remains without improvement," that "hams and shoulders are inactive," and that "cheese is dull;" while flour sells in the Liverpool market, freight, duty, and commission paid, at from 17s. to 20s. (\$4 to \$4.80) per barrel!

For the last three years, there has been a steady diminution of prices, as is shown by the following table of the average prices of wheat throughout Great Britain, per Imperial quarter of 560 lbs., being about nine and one third of our bushels:—

		1849.	1850.	1851.
October	4,	43.01	42.10	37.08
Do.	11,	42.07	42.05	37.01
Do.	18,	42.00	41.10	36.07
November	1,	41.08	40.11	36.06
Do.	8,	41.05	40.07	36.01
Do.	15,	41.01	40.02	36.02
Do.	22,	40.11	40.00	36.05
Do.	29,	40.09	40.01	36.07
December	6,	40.03	40.01	36.09
Do.	13,	39.11	40.01	36.11

Thirty-six shillings per quarter is equal to ninety-four cents a bushel, delivered in England, *freight and duty paid.*

Every where, throughout Europe, the farmers are storing up their grain in

hopes of a rise in prices, as is shown by the following statement of imports into Great Britain for the last six months :—

	Wheat. Qrs.	Flour. Cwts.	Indian Corn. Qrs.	Oats. Qrs.
5th July, - - -	451,010	463,623	316,495	149,018
5th August, - - -	480,426	473,421	213,308	234,057
5th September, - - -	393,751	649,400	160,286	190,732
10th October, - - -	300,280	624,476	193,211	106,676
5th November, - - -	141,926	246,307	138,594	51,102
5th December, - - -	133,863	294,510	126,710	44,162

From the circular to which we are indebted for this statement, we take the following passage, which we recommend to the careful consideration of those of our farming readers who yet have doubts of the fact that the tendency of the *British* free trade system is that of enabling the people of England to fix the prices of all they desire to buy and of all they desire to sell :—

“Ultimately, prices will no doubt be regulated abroad by the British demand. Those who have speculated on the prospect of an advance in our markets have already begun to discover their mistake, and the accounts from the Baltic are of a more subdued tone than for some time past.”

Our own farmers are every where storing up their wheat, and trade in food diminishes, notwithstanding the fact that our whole increase of population is being driven to the raising of food, as is shown by the following statement of the trade of Rochester, the greatest grain market of the country :—

	Shipped in	1850.	1851.
Flour, barrels, - - - - -	- - - - -	553,078	501,621
Wheat, bushels, - - - - -	- - - - -	235,402	166,841
Corn, “ - - - - -	- - - - -	68,459	50,856
Barley, “ - - - - -	- - - - -	69,504	31,383
Oats, “ - - - - -	- - - - -	8,625	2,000

The inspections of flour at Baltimore for the last six years have been as follows :—

1846, ...	850,116
1847, ...	959,456
1848, ...	736,441
1849, ...	764,519
1850, ...	896,592
1851, ...	912,498

The receipts of flour at Boston in the same period has been as follows :—

1846, - - - - -	743,123
1847, - - - - -	1,020,497
1848, - - - - -	909,595
1849, - - - - -	1,007,964
1850, - - - - -	789,681
1851, - - - - -	690,520

The receipts at Philadelphia have been—

	Corn, bu.	Oats, bu.	Rye, b
Receipts in 1846, - - - - -	2,374,484	414,417	17,160
1847, - - - - -	2,560,191	533,147½	52,972½
1848, - - - - -	3,525,404	433,293½	67,048
1849, - - - - -	2,948,811½	456,771½	46,231
1750, - - - - -	2,180,326½	247,448	44,746
1851, - - - - -	2,168,674½	495,191	27,670

In this period, the population of the country has increased thirty per cent., and for the last four years the whole increase has been driven to agriculture.

If we look farther west, we see a similar state of things. The Cleveland

papers inform us that the following is a comparative view of the provision trade of that place for the two past years:—

	1850.	1851.
Number of cattle packed, - - - - -	12,700	6,500
Tierces of beef shipped, - - - - -	15,700	6,000
Barrels of beef shipped, - - - - -	1,500	2,700

This falling off is, as those journals inform us, due to "*the present low prices of tierce beef in Europe*, and to the fact that packers are aware that a fair stock of last year's packing yet remains in New-York."

The *Cincinnati Prices Current* publishes a table of the number of cattle and hogs assessed in seventy-six counties in Ohio for the years 1850 and 1851. The totals are:—

	1850.	1851.
Cattle, - - - - -	1,153,517	995,172
Hogs, - - - - -	1,529,727	1,345,814

The Michigan Central Railroad Company informs its stockholders that "there was a diminution of freight receipts in the sum of \$9,208 21, growing out of *the exceeding low price of wheat and flour in the Eastern markets*. This leaves a large stock of these articles in the hands of the producer for future transportation, the crop of 1851 being the largest ever raised in Michigan and the adjoining States."

The effect of this upon the farmers of Illinois is thus described by the *Chicago Democrat*, which looks anxiously to the raising of a foreign loan, by aid of which a market may be made for food and labor, and thus "arrest the flood of adversity that now threatens this region of country:"—

"PRESSURE AT CHICAGO.—Our moneyed institutions are calling in their loans. . . . There is no demand for land at the prices of the past season. . . . A great deal of money has been loaned to the farmers, and they can hardly pay the interest. . . . We never saw so many people from the country trying to borrow money. . . . Our lumbermen are alarmed. . . . The low price of produce undoubtedly has some effect upon their business. . . . This year the farmers can hardly make their year's ordinary expenses balance, and so they have nothing to expend in lumber. . . . The old adage of 'wheat in and lumber out' is not repeated this year."

Such are the results of the tariff of 1846, and such they are throughout the whole grain-producing region of the Union. And how could they be otherwise? In 1846, Illinois exported 800,000 pigs of lead, the labor employed in producing which made a large and annually increasing market for food; whereas that market has now so much diminished that the whole export of the last year was but 325,000 pigs; while the import of foreign lead, as given in the Treasury Report just published, has been more than *forty-three millions of pounds*, costing more than a *million and a half of dollars*, and requiring to pay for it almost two thirds of our whole exports to Great Britain of corn and pork. In 1846, we produced 850,000 tons of iron; whereas we now produce about 400,000 tons, and import of it to the extent of nearly \$8,000,000, requiring to pay for it nearly all the breadstuffs and provisions exported to Great Britain.

Such having been the results of the past five years, we may now look to the future.

The population of this country is increasing at the rate of almost a million per annum, and must double itself in little more than twenty years; and as the present policy of the nation looks exclusively to the extension of agriculture, it is obvious that if it be continued, there must be a rapidly increasing surplus that cannot be consumed at home, requiring a rapidly increasing

market abroad; and if that market be not found, the effect must be most disastrous to our farming interests. It is seen that the demand for Europe has diminished; and how far it is likely to grow, may be judged from the fact that the recent census of Great Britain and Ireland establishes, that not only has population ceased to increase, but that in the last five years it has actually decreased. From this it is obvious that that market tends still further to diminish, while facts occurring on the continent of Europe prove that the facilities for supplying Great Britain with what she may require are steadily increasing, and that thus there must be a constantly increasing competition for a diminishing market. The effect of this is already seen in the low prices of grain in England, followed by a corresponding reduction in this country, in which wheat now sells at a price almost as low as it has ever done. Vast quantities have accumulated in the granaries of the interior, waiting for the occurrence of unfavorable harvests abroad; but the great extent of the field of cultivation for the regular supply of the market of Great Britain, would seem almost to preclude the possibility of such a rise as would afford to our farmers remunerating prices.

An examination of the commercial history of this country in regard to food, would lead to the same result as has heretofore been shown in regard to cotton, to wit, that the price of the whole has invariably been dependent, not upon the size of the crop, but on the quantity for which it was necessary to seek for a market abroad. In years in which we have had none to export, the prices have been high; whereas in the years in which we had much to sell, prices have been always low, as is now the case. It would seem, therefore, that the remedy for the present low prices would consist in adopting the measures necessary for diminishing the necessity to look to England for a market, by making a market at home. How readily that might be done, will be obvious to all who mark the very small amount of our export to that country during the past two years, and compare it with the vast market that was created between 1843 and 1847, by the demand for the supply of the persons employed in the production of cloths, and iron, and fuel, and in the preparation of machinery for those purposes. The amount of labor employed in building mills and furnaces, opening mines, and creating the machinery to be used in them, could not have been estimated at less than \$30,000,000 per annum, all of which went to the purchase of the fruits of the earth, while the additional labor required for the production of the cloth, the iron, and the fuel produced, amounted to twice or thrice that sum, making a total of at least \$100,000,000. Not only have we ceased to build mills and furnaces, to be occupied by consumers of the fruits of the earth, but we have closed up a large portion of those built in 1844, '45, and '46, and have thus compelled labor to seek employment in agriculture, to the injury of the whole body of agriculturists, whether farmers or planters; as every man transferred from the work of building mills, mining coal, or smelting iron or lead, becomes a producer of food instead of a consumer, and thus swells the surplus which we already raise, for the purpose of supplying a market that must steadily decrease. A continuance in this course, with our vast increase of population, must inevitably be followed by the most ruinous consequences in the reduction of the value of both labor and land; and it would seem to be worthy of the careful consideration of our farmers, whether their interests would not be promoted by a return to that policy under which the domestic production of iron and of cloth, and the domestic market for cotton and sheep's wool, and for food, increased with the rapidity that was manifested from 1843 to 1847.

For the last two years, they have been storing up their grain, in the hope

of a demand from England, consequent upon short crops in future years, similar to that which occurred in 1846; but the probability of any such occurrence diminishes from year to year. Five years ago, the demand for England was so irregular, that no preparation was made on the continent for meeting it; and when that demand occurred, this country profited thereby, and largely profited. Now, an opposite state of things exists. All Europe is engaged in growing grain for England, and the failure of crops in one place is compensated by large crops in others, tending to produce an uniform and constant stream towards a market which tends daily to diminish in its extent; while from day to day the extension of railroads through the grain-growing districts of Europe tends to increase the facility of reaching that market, in which the number of people to be fed is constantly diminishing. From day to day we are augmenting our foreign debt, *the interest on which absorbs twice the amount of our whole exports of food to Great Britain*; and from day to day our people are abandoning the furnaces and mills, the farms and the plantations of the old States; flying from each other, and producing increased necessity for new roads and new loans, with constantly diminishing power to pay either principal or interest; being precisely the course that led to the downfall, and ruin, and repudiation, of the period from 1836 to 1842; and such must speedily be the result of the operation of the tariff of 1846.

Among the objects had in view in the adoption of our present commercial system, was that of giving to the nation a higher stand among the communities of the earth; but the tendency to failure in this respect appears to be greater than in relation to any other. It is well known that the man who is heavily in debt lies always at the mercy of his creditors, and that if he would place himself in a situation to exercise influence over the movements of others, he must first place himself in a position to act freely and independently in relation to his own; but the tendency of the existing system is in precisely the opposite direction. Although consuming far less of all the commodities required for the convenience and comfort of the great mass of the people, the nation is gradually piling up a mass of indebtedness to foreign nations, the total amount of which cannot now be estimated at less than \$300,000,000, the existence of which places the country at any moment at the mercy of the capitalists of other countries; and in case of the occurrence of circumstances rendering necessary the preparation for war, or war itself, the government might be paralyzed in all its efforts to command the revenue for its maintenance, and the nation might, and probably will find itself compelled to submit to injury and insult, because of the operation of a policy that thus places it in the power of the subjects of other nations to affect its movements. To those who doubt the possibility of this we recommend an examination of the condition of the country in 1841-2, at the close of the last *British* free-trade period. It was the advice of the Father of his country, "in time of peace" to "prepare for war;" and it is at least worthy of consideration, whether that advice should not be followed, not in the creation of fleets or armies, but in strengthening the position of the country, so as to enable it at all times to prove to other nations that, while anxious for peace, it was always ready for war in support of its rights and in defense of its interests. Weakness invites aggression; and it may be feared that such will be the result of a policy under which foreigners acquire a daily increasing control over the movements of the nation. Great power and heavy indebtedness cannot coëxist.

The revenue being dependent wholly on imports, any revulsion in Europe must be followed by a similar revulsion here, the effect of which must be greatly to diminish, if not to annihilate, the power to purchase abroad the

supplies now received in exchange for bonds and certificates of debt, while the demand for food is small, and the value of our other staples diminishes with every increase in the quantity for which we need a market abroad. It is within the recollection of all, that, but a few years since, so great was the diminution of revenue consequent upon a revulsion which has its origin in Europe, that it became necessary to send a special agent abroad to endeavor to negotiate a loan, and that he was every where unsuccessful. With the change of commercial policy that then took place, the prosperity of the nation increased so rapidly, that although the imports and revenue largely increased, the necessity for purchasing abroad on credit passed away, and the nation gradually recovered its position among the other nations of the world, fearless of future danger, because it was gradually diminishing its foreign debt; and we recommend it to the careful consideration of our readers, whether the *permanent* position of the nation would not be effectually established by a recurrence to the policy that, in the years from 1843 to 1847, enabled it so completely to reestablish its credit with the world.

Enjoying the advantages of free government, our duty to ourselves and to the world requires that we should adopt every measure tending to diffuse among other nations a sense of the advantages that must result from freedom. If we would acquire power over the modes of thought throughout the world, we must prove to other nations the advantage of our modes of thought and action. By showing that under our system the planter and the farmer acquire from year to year better markets; that the facility of acquiring machinery to be used in aid of labor increases with each succeeding year; that labor becomes more productive, and that the whole people are from year to year enabled better to clothe, to feed, and to educate themselves and their children; that commerce among ourselves increases, and with it commerce with the nations of the world; that our means of transportation increase, and that with that increase there is a daily diminishing tax upon the farmer and planter for the performance of the work of transportation; that equality among the States and among the people tends gradually to increase; that the interests of capitalist and laborer tend daily to be more and more in harmony with each other; and that with each such step the nation becomes more independent of the other nations of the earth, and more and more fitted to associate with them on terms of perfect equality, while more and more enabled to present to them advantages resulting from the maintenance of peace; the people of this country, and more especially the agricultural portion of them, must acquire a daily increasing power over the movements of the world, and a daily increasing power to require the maintenance of peace. Such was the tendency of the policy pursued from 1843 to 1847; but the reverse of that is certainly the tendency of the existing one.

FARMING AND FARM LANDS IN MINNESOTA.

To the Editors of the Plough, the Loom, and the Anvil:

My duties have interfered with my acknowledgment of your circular sooner. I am unwilling to refuse my contribution to a periodical of so much character as *The Plough, the Loom, and the Anvil*, as I feel assured that our country, although now requiring none of the artificial aids to make it yield great crops, may still profit much by the circulation of your journal.

The valley of the Mississippi—one to four miles wide—is subject to inundation, but, escaping this, the low lands are very rich and productive. The

bluffs rise to a height of 100 to 300 feet above the river; and it has been found by experience that the highest prairies contain the richest land. The depth of surface soil varies greatly—from 2 to 50 feet—and throughout that part of the country with which I am acquainted, lies immediately upon a rather coarse limestone. The inferior nature of this rock compels us to resort to Galena or St. Louis for plastering lime. This stratum varies from 4 to 50 feet in thickness, and lies on a blue slate of about 2 feet thick. This is succeeded by a fine sand-rock of chalky whiteness, which has been penetrated to the depth of 90 feet without getting through it. Water is found in it; but wells dug in it are apt to lose their water after a few years. This sand is found 150 miles below and about a mile north of St. Anthony's, but I have not heard of it elsewhere. A quantity of it has been taken to Cincinnati, where it was found valuable in the manufacture of glass. A most beautiful specimen, in a pitcher and powder-horn, has been returned to this place, which I think in brilliancy surpasses any thing I have ever seen.

As you proceed north up the Mississippi, the quantity of rich soil diminishes, and, after 40 or 50 miles, runs out into pine barrens.

The valley of the Minnesota or St. Peter's river, lately purchased by Government from the Indians, I believe to contain some of the most fertile land in the United States. The bottom lands are a deep loam, in most places 7 or 8 feet thick, lying on a rich clay. The uplands, (of easy access,) throughout their extent of hundreds of miles on each side of the river, equal any land that ever was ploughed. It would not be difficult, in any part of this district, for a farmer to find 1,000 acres of the best ploughing land where he might stand in the midst viewing the whole; and this in the immediate neighborhood of a sufficiency of timber and abundant hay meadows. For raising horses, horned cattle, and sheep, the country appears peculiarly fitted; for our very dry winters render all animals vigorous and healthy, and an experience of 30 years has shown no disease to which domestic animals are subject. The wonderful fertility, accompanied by the happiest combination of prairie, timber land, and water, renders it probable that Minnesota will forthwith yield produce for the supply of the whole lower valley of our great river. To these advantages, we may add that water-power is universally met with, and we may easily have manufactories to furnish our whole country.

I am not aware that we have any thing new in the way of breaking prairie. Four or five yoke of oxen are used on ploughs turning 18 to 22 inches. Some ploughs are arranged with wheels and a gauge, requiring only one man to drive and guide them. These, on quite even prairie, are the most economical. Others are in the common form, and require two men, but are the best where the land is uneven or filled with hazel-brush. From two to two and a half acres is an average day's work. The month of June has been invariably found the best time for breaking land.

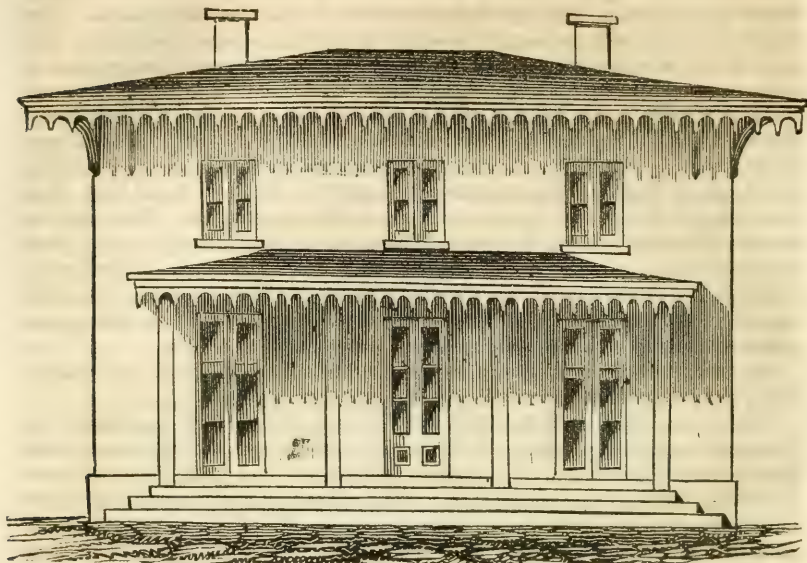
At present we need no potash or other salts as fertilizers, nor shall we for years to come.

I have thus made an opening with you, and hope to be able to send you something more interesting when our crops are thrashed and marketed.—
Your very obedient servant,

P. PRESCOTT.

Fort Snelling, Minnesota, Nov., 1851.

THE WROUGHT IRON WORKS OF THE UNITED STATES.—Capital invested, \$13,995,220; tons of pig metal consumed, 251,491; tons of blooms used, 33,344; tons of ore, 78,767; tons of mineral coal, 572,063; bushels of coke and charcoal, 14,510,838; value of raw material and fuel, \$9,518,100; hands employed, 12,975; tons of wrought iron made, 272,044; value of products, \$16,387,074.



COTTAGE DESIGNS.—No. II.

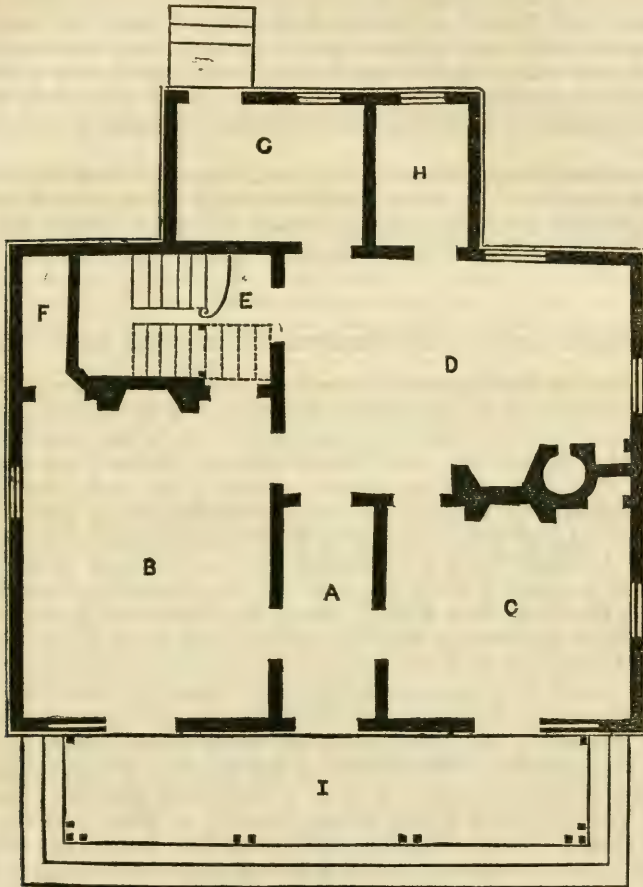
IN accordance with the plan proposed in our last number, we present our readers with a second cottage design, combining neatness, convenience, and economy, and particularly adapted to the wants of a small or moderate-sized family.

The desire, on the part of an individual of small means and limited income, to occupy a large and expensive dwelling, with all the accumulated expenditures for furniture, household service, &c., is an error into which too many fall, and one which is generally attended with a sacrifice of real comfort to the occupant, as well as a very unnecessary drain upon his resources. Much more real happiness and contentment are often found in the comfortable rural cottage home than the most splendid mansion or magnificent villa could impart, particularly if the owner is not in circumstances to support a style and equipage which would appropriately compare with it.

The above design is neat and chaste in appearance, presenting in its elevation and exterior arrangement something of the Oriental or Chinese style of architecture, while the interior plan is both convenient and pleasant. The main building is designed to be thirty-four by twenty-six feet, with a piazza or veranda in front, six feet deep. To the main building is attached an addition in the rear for a sink-room, pantry, &c., to be nine by seventeen feet.

The principal story should be ten feet in clear from the floor to the ceiling, and the chamber story eight feet. The parlor is thirteen by seventeen feet in size, the bed-room twelve by thirteen, and the kitchen thirteen by nineteen feet. In the latter, it will be perceived by the ground plan which we annex, is arranged on one side of the chimney, and connected therewith, a "country brick oven," a very convenient appendage to a rural home. It will also be seen that the kitchen D communicates with the front hall A, the parlor B, the

bed-room c, the stairway e, the sink-room g, and the pantry h. The parlor b also communicates with the front hall a, the kitchen d, the stairway e, and a closet f. For further convenience, there may be a door opening from the stairway into the sink-room, which would allow a communication from the parlor and the chambers to the sink-room and back-door without passing through the kitchen.



VIEW OF THE GROUND PLAN.

In the construction of a cottage of this description, a *heavy* frame is not required, as all necessary strength may be obtained by properly "bracing" and "budging" the building. The sides may be covered with well-seasoned boards one inch, or one and a quarter inch thick, grooved and tongued. If placed vertically and neatly battened, the covering will be better and more durable. If put on horizontally, the boards should not exceed four and a half inches in width, and be carefully laid with white lead paint in the joints, without battens. The former method, however, we prefer, as being more durable, and requiring less expense in repairs. The roof may be nearly flat, covered with matched boards, and tinned, or with canvas or light duck,

well painted with three coats of the "OHIO Fire and Weather-Proof Paint;"* or it may have more "pitch," and be shingled in the usual manner.

It will be perceived by the plan that the front parlor and bed-room windows extend to the floor, and instead of the usual manner of hanging, the sashes slide into the walls, and are supported on rollers inserted in the bottom. They are protected by outside, and, if desirable, inside blinds, which are hung in the usual manner, opening from the middle each way, the exterior blinds outwards; and if blinds are used inside, they will of course fold inwards.

From this design, any judicious architect or builder may make such trivial alterations or changes in its internal arrangement as may comport with the wishes or circumstances of the proprietor; but we very much doubt whether any improvement in regard to general convenience for family purposes can be made.

A very neat cottage, embracing the general features of the above plan, with a cellar under the whole, and the chambers plainly and properly finished, including outside blinds and painting throughout, can be erected, any where in the Eastern and Middle States, for about \$1,600.

HARMONY AMONG THE TEACHERS OF BRITISH FREE TRADE.

WE know of few things more remarkable than the total absence of knowledge manifested by the advocates, in this country, of the maintenance of the British system, which looks to monopolizing the trade and manufactures of the world. Prove to them that the consumption of cloth and iron diminishes instead of increasing, and the answer is found in the words "Free Trade." Show them that the system tends to compel the farmers and planters of the world to make all their exchanges in English markets, and to render them entirely dependent upon the merchants and manufacturers of England in regard to the prices at which they shall buy and sell, and the answer is again found in the words "Free Trade!" Invite their attention to the fact that the separation of the consumer from the producer tends to the exhaustion of the farmer, by reason of its destroying his power to return to the land any of the manure yielded by its products, and again the answer is, "Free Trade!"

To this absence of knowledge is due the fact that the arguments of no two of the advocates of the system, nor of any one at different times, are in harmony with each other. Meet them upon any statement of facts, or principles, and they are always ready with another, directly the opposite of that upon which they have been beaten, closing, however, as before, with the words "Free Trade!" *Proteus*-like, they change from hour to hour, and with every change they more and more expose their total want of knowledge of what it is that constitutes real freedom of trade. In illustration of these views, we now lay before our readers the following extract from one of the free-trade journals of the day, written shortly previous to the advent to our shores of Governor Kossuth:—

The movements of Kossuth in England, particularly in Manchester, must create consternation amidst the ranks of Protectionists on both sides of the Atlantic. The excitement produced by the free-trade speeches and demonstrations which have marked the progress of Kossuth must lead to important results. The death-knell of protection has been sounded, and, soon after Kossuth's arrival in this country, it will be literally anni-

* For sale by W. H. Starr, 67 Beekman street, New-York.

hilated. Political and commercial liberty must go hand in hand. Where one is, there must the other be also. Free trade has never yet been established in any great commercial country. The idea has gone forth, and as it advances will gain strength, and become more generally entertained. The principle exists. The theory is well understood; but we have not yet had a practical demonstration of the proposed system. We shall soon reach that point. Events which have taken place in England within the past thirty days have given a great impetus to this principle, and it must ultimately be adopted in the most liberal sense. The probability is, that we shall hear no more from the manufacturing interests on this side of the Atlantic about protection. We doubt if there is ever another demonstration made in Congress relative to a tariff giving as much protection as the one now in operation. Manufactures in the United States will increase fast enough without any tariff at all. With open ports and a complete abolition of all custom-houses, the manufacturing interest would prosper as much as it should to insure a healthy, permanent progress. *Within the past four years, the manufacturers of the United States, in the aggregate, have made more money in the same length of time than under any tariff we have ever had. Protection creates great competition, and, of course, reduces prices; but the difficulty is, that it reduces prices so much that most of the manufacturers fail, and all those engaged are ruined. The result is, that consumers for a time get certain articles cheap, but most of the time have to pay high prices. After the manufacturers have broken down, and the business at home is completely prostrated, we have to look abroad for our supplies, and it is then that the high duty becomes so onerous. Then the consumer feels the evils of protection. Manufactures in all countries must be built up gradually to become permanent, and the only way to build them up firmly is to withdraw all protection. Those that are established under a free-trade system, have nothing to fear from any change in the policy of the Government; but those depending upon protection for support are never safe. Subject to certain influences by every change in the political affairs of the country, they know not when they may be completely prostrated. There is nothing like free trade in any thing connected with finance and commerce. It is the only sure foundation upon which to build a commercial system that will not only be permanent, but productive of the greatest good to the greatest number.—New-York Herald.*

It is probable that some of our readers have preserved the report of the late Secretary, Mr. Walker; and if so, we would invite them to an examination of his arguments in support of the maintenance of the British system, and a comparison of them with those here given, with a view to see that they differ in every point. That done, we would ask them to compare the two with the facts, and satisfy themselves that the ex-Secretary's predictions as to the future have in no instance been realized, and that the facts, as here given, are in direct opposition to the facts as they exist.

Mr. Walker assured the people that they were being taxed to enable the manufacturers to make large fortunes, and thus create an aristocracy of wealth. The present writer, on the contrary, assures his readers that, in the last four years, the manufacturers "have made more money in the same time than under any other tariff." It is not for us to reconcile the views of these learned Thebans, nor to reconcile those of the *Herald* with the fact that these *very prosperous* manufacturers now convert into cloth one fourth less cotton and sheep's wool than they did four years since, and have been from year to year diminishing in number by reason of bankruptcy, resulting from the fact that, diminished as has been the production of cloth, the demand had diminished so much more rapidly, that it was constantly being sold at less than the cost of production. Neither is it for us to reconcile this statement with the further fact that the *very prosperous* owners of furnaces and rolling mills have, to a great extent, been sold out by the sheriff; and that the manufacture of iron, which trebled in four years, has diminished, under the tariff of 1846, to the extent of fifty per cent. If the manufacturers have made money, where are the evidences that such has been the case? Shall they be sought in mills and furnaces now abandoned, in which have been invested many millions of dollars, now totally unproductive to their owners? If they had made money,

would they not be extending their works, and building new mills and new furnaces, instead of abandoning old ones?

Mr. Walker assured the nation that protection gave to the home producers a monopoly of the domestic trade, and enabled them to add to the true price of the article the whole amount of duty; but the *Herald* assures its readers that "*protection creates great competition, and, of course, reduces prices,*" as it certainly does. The result, as we are here assured, is, that "*for a time consumers get certain articles cheap;*" that is, during the continuance of protection; but prices are then, we are assured, reduced so much that producers are ruined. With this, however, the manufacturers are quite content. They say, Let us have domestic competition to contend with, and we will reduce the price so low as to render unnecessary the importation of cloth and iron, and then the people will be able to consume thrice as much as they do now, and be better fed, better clothed, better lodged, and better educated than they can now afford to be. In reply, Mr. Walker says: "My friend of the *Herald* is quite wrong: protection does not make goods cheap; it makes them dear;" and to reduce the price, he takes off the duty; and then it is that prices rise, as is here shown in the prices of lead under the tariffs of 1842 and 1846:—

Tariff of 1842. Duty, \$3 per 100 lbs.		Tariff of 1846. Duty, 60 cents per 100 lbs.	
Receipts at New-Orleans.	Prices.	Receipts at New-Orleans.	Prices.
1843, 571,000 pigs.	\$2 37	1847, 659,000 pigs.	\$3 00
1844, 639,000 pigs.	2 82	1848, 606,000 pigs.	3 50
1845, 732,000 pigs.	3 00	1849, 518,000 pigs.	3 62
1846, 785,000 pigs.	2 90	1850, 415,000 pigs.	4 05
		1851, 325,000 pigs.	4 07

Protection increases competition and diminishes prices; and its effect is to throw upon the foreign producer the payment of the duty, as is shown by the fact that, under the tariff of 1842, lead was sold at less than the amount of the duty. British free trade diminishes competition and raises prices, and throws upon the domestic consumer the payment of the duty, as is shown by the fact that lead now sells at a price as much higher than it did in 1846 as the whole amount of the duty, and the invoice price of foreign lead is now greater than was the domestic price in 1845 and 1846.

We are here promised an abolition of all custom-houses; and yet another free-trade paper, the *Journal of Commerce*, assures its readers that the present tariff is the best we have ever had—better even than that of 1841–2, which repudiated the idea of protection, and gave a uniform revenue duty of twenty per cent. It is really to be regretted that these gentlemen could not for once understand themselves, and let us know what it is they would prefer, and what precisely is the goal to be attained. If it is increased competition, we are here assured that protection gives it. If it is low prices, we are here assured that they also are a consequence of protection; and yet the same writer assures us that the way to a healthy permanent progress is to abolish all custom-houses and all protection even for revenue, and thus secure to Great Britain for ever the power to compel our farmers and our planters—like those of Canada—to make all their exchanges in that single market, filled with men whose existence depends upon buying at the lowest price from the farmer and planter, and selling to them at the highest one; when it needs but an effort on the part of the farmer and planter to bring the consumer to their sides, and to make their exchanges at home, according to the doctrines of ADAM SMITH. It is much to be regretted that the learned men who undertake to teach political economy could not be induced to study the A B C of the science in the "Wealth of Nations."

THE TRUE ROAD TO PERFECT FREEDOM OF TRADE.

IN our December number, we called the attention of our readers to the very striking fact, that, in the effort to obtain direct trade with foreign countries, our Southern friends looked only to those countries which had established protection, neglecting altogether those which maintained free trade with England. They desired trade with Belgium and Germany, the favored lands of high protection; and they cared nothing for trade with Portugal or Turkey, always subject to British free trade. The reason for this is simple. The people who are protected are enabled to maintain trade, while those who are not protected are unable to maintain it. The trade of Ireland and India is worthless, and it diminishes from year to year; while that of Belgium and Germany is great, and tends to increase from year to year.

We have now before us a statement of the exports of Great Britain, by which it appears that the protected Germans and Belgians, and the half-protected people of this Union, are customers to that country for no less than twenty-seven millions of pounds, while the rest of the world takes from her but thirty-four millions; and thus a population of less than fifty millions of protected men makes almost as large a trade as one of hundreds of millions of unprotected men.

The exports to Germany have increased rapidly since the adoption of protection in 1835, because the German people have become better able to buy, and to pay for what they need; but no such change has taken place in unprotected countries. The whole export to Turkey, Egypt, and the East, is but £2,810,000, and that to Portugal but £1,029,000, while the hundred millions that occupy the British colonies take but £18,628,000, of which no inconsiderable portion is sent with a view to smuggling into Spain, China, and other countries; and all the measures of the British Government are directed to the protection of this smuggling trade, as was recently shown by us in an extract from the *Chinese Mail*, an English paper published at Hong Kong.

The British system of trade looks to the exhaustion of the people who cultivate the earth; and therefore it is that trade diminishes in amount wherever British free trade is permitted to exist. Protection looks to the enrichment of those who cultivate the earth, because it looks to placing the consumer by the side of the producer, enabling the latter to return to the soil the refuse of its products; and therefore it is that trade increases in amount wherever it is established. The true road to perfect freedom of trade lies in the direction of the largest trade; and our readers will readily see that the road to a large trade lies in the direction of enriching the land and its owner, instead of impoverishing both.

THE TOBACCO CROP IN ONONDAGA CO., N. Y.

IN consequence of the excitement which has prevailed among the farmers of Onondaga this season in relation to the astounding profits proceeding from the raising of tobacco, many of them went into the business of producing young plants in the spring pretty extensively, and the results in many instances, I am happy to state, have turned out favorably; though, notwithstanding the profitableness of the cultivation of the weed, I must unhesitatingly acknowledge that the tobacco fever (for it cannot in reality be called any thing else) has prevailed to an unwarrantable extent, and for the palpable reason that many embarked in the cultivation of the weed when, in fact, they were

almost perfectly unacquainted with the proper mode of cultivating it. For instance, here is neighbor R., who engaged in cultivating the plant in a heedless and unintelligent manner, and in consequence has had his tobacco injured by early frosts. There is neighbor B. also, who did not wish to gain any information from books and agricultural journals in reference to managing the weed, has been unfortunate in securing and curing his tobacco—all attributable to gross heedlessness and imprudence, which may properly be ascribed to selfish and ignorant views in regard to gaining knowledge from others. In fact, some farmers among us did not put up their tobacco-houses until the frost had materially injured their plants, though they have managed in the end to save themselves and make a pretty fair profit out of their crops.

As to the number of acres of tobacco which have been raised in Onondaga this season, it would be a pretty hard matter to state; but suffice it to say, that almost every town in the county has raised more or less of the weed; and perhaps it will be well to state that those who embarked in cultivating it in 1850 went into its cultivation more extensively this season. Tobacconists have offered up liberal prices for the plant on the ground; and from pretty authentic sources I learn that some farmers have realized a profit of from \$160 to \$230 per acre. Encouraged by such returns, and by good crops, as a general thing, I presume next season will show an increase of the weed of one half over this year.

Not only have the people gone into the business of raising tobacco largely in this county, but fully as extensively in many of the adjacent counties. Madison, Oneida, Cayuga, and Cortland, I presume, will turn out many thousand pounds, or at least enough to keep the smoking and chewing community puffing and snuffing for days to come.

The variety which is cultivated among us is the "Connecticut Long Leaf." It does well, and is perhaps preferable to any other kind for the northern latitudes.

W. TAPPEN.

Baldwinsville, N. Y., Dec., 1851.

THE APPLICATION OF SALT AS A MANURE.

THE application of common salt as a fertilizer has been partially understood and practised by a few of our agriculturists, but we very much doubt whether the full benefits of this substance have been derived by those even who have made the experiment, and in some degree realized the advantage it affords. It may be applied advantageously directly to the soil, or it may be mixed with the dung-heap. It is found beneficial to pasture as well as root crops, sweetening vegetation and rendering it more wholesome. It attracts the humid vapors and repels frost, thus assisting in keeping the land moist in dry, and warm in cold weather. Salt renders all the ammoniacal compounds less volatile, and helps to prepare the food of the plant for vegetable aliment. When applied plentifully to the manure-heap, it destroys all vermin, and the germs of life in the seeds of weeds and noxious plants are by its effects entirely exterminated.

In making use of salt in the manure-heap or compost-bed, but little should be used if fermentation is desired, as in large quantities it retards, and will frequently entirely suspend it; but a short time previous to the application of the manure to the land, salt may be freely used with great service to the crops. Mixed with lime and its compounds, it undergoes decomposition, producing soda or its combinations with carbonic acid, which is a powerful digester and feeder, and forms muriate of lime, which has the strongest attraction for moisture of almost any known substance. With gypsum, it will supply soda and

sulphuric acid cheaper than any other material, and is a very good safeguard against blast, mildew, and disease in grain and vegetables.

When salt is applied to the soil at the rate of about ten bushels to an acre of either grass or vegetables, it renders the product more nutritious, and generally increases the yield about one fifth. The wheat crop is also increased by its use, from four to seven bushels per acre. For asparagus, or sea-kale, it may be used in much larger proportions, using from two to three pounds per square yard, forking it in early in the spring. This application renders the product much more palatable and tender, and destroys all weeds and noxious vermin, rendering its culture more easy, and its growth more vigorous and rapid. It is also said to bring crops forward nearly ten days earlier than when planted without its application.

As a stimulant to vegetable substances, salt has been long favorably known in England, and various experiments have been made confirming this truth. Dr. Priestley added to vials each containing an ounce and a half of water, various proportions of common salt, from one to twelve grains, and in the solutions placed various sprigs of mint and other vegetables. In those solutions which contained more than twelve grains, the plants died immediately, and the others died in their order, except that which contained three grains of salt, which seemed to grow as well as plants growing in simple water. It was remarkable, however, that this plant, as well as all those that died in the strongest solutions, seemed to flourish *at first* more than those which were growing in simple water, and that that which had three grains of salt, and that which had one grain only, continued to live after the plants in simple water were dead. (*Nat. Philos.*, vol. i., p. 106.) That vegetable substances are capable of being stimulated by chemical solutions, is well known. A solution of chlorine in water will make certain seeds vegetate which would otherwise rot in the earth; and a mixture of camphor, &c., has been found to be very beneficial in restoring vitality to cuttings of various exotics too long delayed in their passage.

Salt, it should be remembered, *rarely causes the wheat plant to grow larger or taller*, but it fills up the ear better, and brings the weaker plants forward. Mr. Sinclair says that "salt appears to lessen the produce of straw, and increase the weight of grain." I have never been able, says Johnson, in my experiments, nor in any I have witnessed, (with salt alone,) to observe any increased quantity of straw, even in cases where there was an increased produce, by means of salt, of six bushels of wheat per acre. The salt should be applied some time before sowing the seed, not less than ten, and not more than twenty bushels per acre. In my own experiments upon a light gravelly soil, at Great Totham, in Essex, the use of this quantity of salt per acre (in 1819) produced an increase of five and a half bushels per acre. The following statement of the result of some trials in 1820, on a light and gravelly soil, will show how important may be the result to the country at large by its judicious application. I regret that incessant employment of a very different nature has hitherto prevented my continuing these experiments.

	Produce per acre.	Bushels.	lbs.
No. 1. Soil without any manure for four years, - -	- -	13	26
2. Soil manured with stable-dung to the previous crop, (potatoes,) - - - - -	- - - - -	26	52
3. Soil with 5 bushels of salt per acre, and no other manure for four years, - - - - -	- - - - -	26	12

The testimony of an Essex farmer corroborates these results. "The soil," says Mr. James Challis, of Panfield, "which is of rather a loose, hollow descrip-

tion, had a dressing of salt in November, after the wheat was sown, about fourteen or fifteen bushels per acre: it produced at the rate of six bushels per acre more than that which was not dressed, and it is better in quality."

It is a custom in most counties of England, to apply salt and water as a steep to prevent the ravages of the disease in wheat called smut; the value of this is known to almost every farmer. Recent experiments have suggested that it may even be of use, when employed in larger quantities, as a preventive of mildew, the most dreadful of the numerous diseases to which the cultivated grasses are exposed. The experiments of the late Rev. E. Cartwright strongly evidence that when salt and water are sprinkled with a brush upon diseased plants, it effects a complete cure, even in apparently the most desperate cases. "The proportion, one pound to a gallon of water, laid on with a plasterer's brush, the operator making his casts as when sowing corn, is instant death to the fungus." The time and expense are trifling. It appeared, in the course of some inquiries made by the Board of Agriculture, that a Cornish farmer, Mr. Sickler, and also the Rev. R. Hoblin, were accustomed to employ refuse salt as a manure, and that their crops were never infected with rust or blight.

Experiments in England demonstrate the efficacy of salt on barley and oats. In 1820, on a good alluvial soil, at Heybridge, in Essex, in a field of barley, the results of two experiments were:

	Bushels.
1. Soil dressed with 6 bushels of salt per acre, and 20 loads of earth and stable-dung, at turnip-time, producing per acre,	65
2. Soil dressed with 20 loads of dung and earth, - - -	60

In the same year, at Sproughton, in Suffolk, on a sandy barley soil, belonging to Mr. Ransome:

	Bushels of barley.
1. Soil without any manure produced per acre, - - -	30
2. Soil dressed with 16 bushels of salt per acre in March, -	51

The following Table contains the results of fourteen experiments, made by the late Mr. George Sinclair, at Woburn, on the uses of Salt to the barley crop. The soil had, the previous year, carried a crop of turnips, and was composed of three fourths silicious sand:

KIND OF MANURE AND MODE OF APPLYING IT.	Quant. per acre.		Produce.	
	Bushels of salt.	Bushels of lime.	Bushels.	Wt. per bush., lbs.
BARLEY.				
Soil without manure of any kind, - - -	—	—	12	43½
Salt sown with the seed, - - -	55	—	20	43½
Salt sown with the seed, - - -	5½	—	20	42½
Salt applied before sowing, - - -	33	—	28½	44½
Salt applied before sowing, - - -	11	—	28¾	43
Salt applied before sowing, - - -	5½	—	23½	43
Lime and salt applied before sowing, - - -	33	60	9	42½
Lime and salt applied before sowing, - - -	11	60	22	42½
Lime and salt before sowing, - - -	16½	30	13½	43
Lime mixed and sown with the seed, - - -	—	60	18½	43¾
Lime mixed with soil previous to sowing, - - -	—	60	10½	43½
OATS.				
Sown without any manure, - - -	—	—	28¾	33
Salt with the seed, - - -	44	—	17½	30½
Salt mixed with the soil, - - -	44	—	27	27

The following Table contains the results of the experiments made at Woburn, by the late Mr. George Sinclair, with his usual scientific accuracy. The farmer's attention is invited to this table, as containing a mass of valuable information. The soil on which these experiments were made was sandy, and the plots each contained thirty-six square feet. The Talavera wheat was drilled into the soil November 5th, and reaped Aug. 2d.

KIND OF MANURE, AND MODE OF APPLYING IT.	Manures; omitting fractions, quantity per acre.				Produce.	
	Dung in tons.	Salt in bushels.	Lime in bushels.	Oil cake in bushels.	Bushels.	Weight of a bushel.
Spit manure applied previous to sowing the seed,....	45	..	..	..	49	57 $\frac{3}{4}$
Salt and spit manure dug in; salt mixed with seed,..	45	44	..	..	75	58
Salt mixed with soil four inches deep, before sowing, ..	..	44	..	..	91	59
Salt mixed with soil four inches deep, before sowing, ..	..	5 $\frac{1}{2}$	..	..	77	59
Salt sown with seed, ...	..	5 $\frac{1}{2}$	..	..	73	57
Salt combined with manure, dug in four inches deep, ..	45	5 $\frac{1}{2}$	..	..	75	52 $\frac{1}{2}$
Salt and manure; salt sown with seed, manure dug in, ..	45	5 $\frac{1}{2}$	..	..	95	59
Salt and manure; salt applied to the surface, ...	45	5 $\frac{1}{2}$	..	..	82	57 $\frac{1}{2}$
Salt simply applied to the surface, ...	..	5 $\frac{1}{2}$	..	..	60	55
Salt and manure; salt applied to the surface, ...	45	44	..	..	55	53 $\frac{3}{4}$
Salt simply applied to the surface, ...	..	44	..	..	77	56
Salt and lime mixed, and applied with the seed, ...	..	5 $\frac{1}{2}$	121	..	66	56 $\frac{1}{2}$
Salt and lime mixed, and applied before sowing, ...	..	5 $\frac{1}{2}$	120	..	68	56 $\frac{1}{2}$
Salt and lime mixed, and applied on the surface, ...	..	5 $\frac{1}{2}$	120	..	64	56
Lime applied with the seed, ...	..	..	120	..	53	52 $\frac{1}{2}$
Lime applied to the surface, ...	..	..	120	..	57	54 $\frac{1}{2}$
Salt, lime, and dung mixed, and applied as manure, ..	90	5 $\frac{1}{2}$	120	..	62	56 $\frac{1}{2}$
Long dung dug in as manure, ...	41	..	..	..	71	56 $\frac{3}{4}$
Salt and long dung mixed, and applied as manure, ..	41	22	..	..	71	56
Lime and long dung mixed, and applied as manure, ..	41	..	120	..	54	57
Salt and long dung mixed, and applied as manure, ..	41	44	..	..	..	56
Oil cake mixed, and applied with the seed, ...	..	..	..	5 $\frac{1}{2}$	48	56
Oil cake applied as common manure, ...	..	..	..	5 $\frac{1}{2}$	73	60
Oil cake and lime applied as common manure, ...	..	..	120	5 $\frac{1}{2}$	74 $\frac{1}{2}$	56 $\frac{3}{4}$
Salt and oil cake mixed, and sown with the seed, ...	..	5 $\frac{1}{2}$	..	5 $\frac{1}{2}$	60 $\frac{1}{2}$	2
Salt and oil cake mixed, and applied as manure, ...	..	5 $\frac{1}{2}$	..	5 $\frac{1}{2}$	74 $\frac{1}{2}$	58
Salt, oil cake, and manure, applied as manure, ...	90	5 $\frac{1}{2}$	..	5 $\frac{1}{2}$	74 $\frac{1}{2}$	58
Salt, oil cake, and manure; the salt and oil cake sown with the seed, manure previously dug in, ...	90	5 $\frac{1}{2}$	120	5 $\frac{1}{2}$	55 $\frac{1}{2}$	55 $\frac{1}{2}$
Salt, oil cake, and lime applied as manure, ...	..	5 $\frac{1}{2}$	120	5 $\frac{1}{2}$	71	51 $\frac{1}{2}$
Salt, oil cake, and lime sown with the seed, ...	..	5 $\frac{1}{2}$	120	5 $\frac{1}{2}$	55 $\frac{1}{2}$	55 $\frac{1}{2}$
Salt, oil cake, and lime applied to the surface, ...	..	5 $\frac{1}{2}$	..	5 $\frac{1}{2}$	66	58
Salt applied to the soil in the preceding spring, ...	..	62	..	..	44	57 $\frac{1}{2}$
Salt applied to the soil in the preceding spring, ...	..	31	..	..	26 $\frac{1}{2}$	47 $\frac{1}{2}$

In these experiments upon oats, the quantity of salt applied was evidently too great. Mr. Legrand states that, in his experiments upon barley, it gradually advanced in its effects to sixteen bushels, and as gradually diminished to forty bushels, when vegetation was stopped.

As a Manure for Grass-Land, Meadows, &c., salt has been used in all parts of England, with varying success. It always, however, sweetens the herbage. It has been employed at the rate of 6 to 16 bushels per acre, and where the primary object has been the destruction of the old turf, even 30 to 40 bushels have been successfully employed on the same extent of land. It has the effect of completely preventing worm-casts on lawns, &c.

In a letter from Mr. Collins, of Kenton, Devonshire, 1826, he says: "One of my neighbors writes me, 'in using salt as a manure on grass land, I have found the salted portions not to be affected by severe frosty nights, when every

blade of grass on the unsalted portions has been in a frozen state. I observe, too, that it is destructive to every kind of grub-worm; and I am convinced, where it has been used with judgment, that it has not failed.' Another intelligent neighbor," continues Mr. Collins, "whose farm is almost entirely a light black sand, writes, 'I have found salt to answer my most sanguine expectations for barley, oats, potatoes, and turnips, both as to the increased quantity and improved quality of the crops, of which I can now give ocular demonstration: my barley and oats, which used to yield me only 15 to 20 bushels per acre, now yield from 40 to 50. My wheat is certainly much improved in quality, but I expected more in quantity. I have 35 bushels of wheat from an acre dressed with 10 bushels of salt; and from the same field last year, after the same quantity of salt, 140 bags of potatoes per acre. This year again, dressed with 10 bushels of salt, I have not more than 20 bushels of wheat per acre, but the quality very superior indeed, and the root of clover in it very fine and luxuriant. In every field I have salted, I find the grass very much superior to any produced before the use of salt.' I have since, adds Mr. Collins, gone over his farm, and am astonished at the verdant pasturage, in what used to be coarse and rushy meadows. In this arable land, he never got more than 10 bushels of wheat per acre until he used salt; so that this is also a decided improvement."

Some further remarks on this topic will form the subject of another article.

RESOURCES OF ILLINOIS.

"As our Illinois beds are worked deeper, they will furnish an article as good, and ere long better than the Pennsylvania coal. Adjoining the *great unworked colliery*, which stretches across our State from central Iowa to northern Kentucky, manufacturing cities will soon arise as busy as Pittsburg, perhaps as smoky. And coal, more and more valuable for manufacturing purposes, for solidity, density, heat-giving, &c., will be brought up as the progress of our North-western manufacturing towns makes a demand for it."—*Galena Daily Advertiser*.

Fuel being so abundant in the West, and fuel being the chief ingredient of iron, it would seem extraordinary that Illinois should now look abroad to borrow money to be used in the purchase of that commodity, when she has in her possession so much *coal that she cannot sell, ore that she cannot sell, and food that she cannot sell*—the three being the commodities of which iron is composed. It is anticipated, however, that at some future time this "great unworked colliery" will be worked, and that the progress of "North-western manufacturing towns will make a demand for it;" but the prospect appears to us at present to be small, as from every part of the West we receive accounts similar to that contained in the following extract in reference to the iron trade of Ohio:—

"HOME FACTS.—MORE RESULTS OF THE BRITISH TARIFF OF 1846.—The Youngstown Iron Company, we learn, has been obliged to close business. It was a joint-stock company, composed of citizens of Youngstown, with a capital stock of about forty thousand dollars, and has been in operation five years. The Company has never made any dividend during its existence, and we are assured that the stockholders will lose near *thirty thousand dollars*, including the interest on the capital invested. The works were situated near a fine coal bank, with iron ore in abundance near at hand, and every facility for doing a successful business. And what has been the cause of the failure? The answer is plain, and the same cause has closed over one half the iron works in Pennsylvania. It is this: The reduction of the duty on imported iron, by the tariff of 1846, was such that it enables the British monopolists to flood this country with their iron, and deprive our home establishments of a market for their products; and this Company has

been obliged to keep large amounts of iron on hand, or sell at ruinous prices and at great hazard of loss. Had the efficient protection of the iron interest afforded by the tariff of 1842 been retained, this Company might now be doing a prosperous business, while other works of the kind, owing to the great facilities afforded in this section of the State, would have sprung into existence, and thus furnished a market at the farmer's door for his surplus produce. The citizens of Youngstown and the farming community around will feel the loss sustained by the closing of this establishment, as well as the workmen engaged in it, who are now turned out of employment and obliged to retreat to some other means of obtaining subsistence. Thus we go on prospering (?) under the British tariff of 1846, which was to work out the salvation of the country. We trust the people will ere long see that their true interests lie in protection, and not be again deceived by those who gained power by the cry of 'Polk, Dallas, and the Tariff of 1842.'

Such being the state of affairs with regard to the trade in IRON, we may now look to the trade in LEAD, a commodity in which Illinois is so rich that she could readily supply the world, and promised so to do while protection was being afforded to its producers; and here we are fortunately enabled to give the precise facts in reference both to the trade by New-Orleans and that by the New-York canals, showing the whole amount of exports under the tariffs of 1842 and 1846.

RECEIPTS AT NEW-ORLEANS.

Tariff of 1842.				Tariff of 1846.			
			Pigs.				Pigs.
1843,	-	-	571,000	1847,	-	-	659,000
1844,	-	-	639,000	1848,	-	-	606,000
1845,	-	-	732,000	1849,	-	-	518,000
1846,	-	-	785,000	1850,	-	-	415,000
Increase, FORTY PER CENT.				1851,	-	-	325,000
				Diminution, SIXTY PER CENT.			

RECEIPTS ON THE HUDSON.

								Pounds.
1845,	-	-	-	-	-	-	-	223,500
1846,	-	-	-	-	-	-	-	489,800
1847,	-	-	-	-	-	-	-	482,000
1848,	-	-	-	-	-	-	-	80,000
1849,	-	-	-	-	-	-	-	11,167
1850,	-	-	-	-	-	-	-	88,000
1851,	-	-	-	-	-	-	-	Returns not yet made up.
Diminution under the tariff of 1846, EIGHTY PER CENT.								

Believing that it may interest our friends in Illinois to understand by whom it is that the domestic demand for lead is now being supplied, we give a statement of imports under the tariff of 1846, as follows:—

		Pounds.	Value.
1847-8,	-	324,905	\$6,288
1848-9,	-	2,684,700	\$85,367
1849-50,	-	36,997,751	\$1,182,597
1850-51,	-	43,000,000	\$1,500,000

It must undoubtedly be gratifying to the owners of mineral lands to know that the market is being thus supplied by the people of Europe, even if their own mines remain unwrought; and to the owners of the *great unworked colliery* to know that the fuel of Europe is in increased demand; and to the growers of food in Illinois to know that, even if they have to store their own wheat for want of demand, the demand for that of Europe, in the form of lead, is rapidly growing—but how all these things tend to produce great manufacturing towns and villages in the West and North-west, we are quite unable to see. We should be glad if the Galena paper from which we quote would republish

this view of the working of the tariff of 1846, and explain how it is that they are to *commence* the work of making cloth, if they cannot *continue* the making of lead; and how it is that the farmers of Illinois are being benefited by the import of foreign labor and food, in the form of lead and iron, while fuel and ore so much abound among themselves.

MANUFACTURES AT THE SOUTH.

THERE is a fact connected with the history of manufactures that has its uses, whether we regard it as a matter of industrial enterprise or political speculation. Nations, like individuals, are not unfrequently compelled to serve apprenticeships, and we have an illustration in the history of those countries which have become wealthy and independent by their manufactures.

In regard to this subject, the *Dry Goods Reporter* of this city refers to the time when England was in a condition of vassalage to Holland and the Netherlands, in respect to this most important feature of her industry and greatness. The markets of London were filled with "iron, lumber, and leather, ready manufactured. The English grew food for the Dutch, and the Dutch ate it; wool for the Dutch, and the Dutch wove it." But this condition lasted only long enough for England to become as thoroughly acquainted with manufacturing as her taskmaster was; when, throwing off the shackles which made her dependent, that imperial system of British manufactures was established which has reared an empire the most magnificent in wealth and power the world has ever seen.

America, in her colonial condition, was to Great Britain what Great Britain had been to the German States. The House of Commons so considered it, when they declared "that the erecting of manufactories in the colonies tended to lessen their dependence upon the mother country." It is well known to every one at all conversant with the early history of his country, that it was only after our political independence was achieved that we turned our attention to profitable manufactures. And no lover of his country can ever forget, that from the year 1807 to 1815, during the embargo, non-intercourse act, and the war, dates our industrial independence of Great Britain; and that those very acts gave an impetus to manufactures, trade, and business, which were, beyond precedent, profitable.

The editor makes the application of this policy to our brethren at the South; at the same time disclaiming any intention by the comparison to excite sectional jealousy, or persuade the South that she has been in a condition of degrading vassalage to the North. He only wishes the South to feel that the term of her apprenticeship has expired, and would desire to impress upon the minds of her people the conviction that the advantages which they possess over the North for the manufacture of cheap and coarse goods (for to manufacture the finer qualities will require more experience and capital than they now possess) are many and important. Cheap living, low wages, cheap cotton, coal, and iron, constitute the great elements of success in the introduction and successful prosecution of cotton manufacture. No country in the world possesses these elements in a degree equal to the Southern and South-western States. Heretofore the capital and industry of this large section of the country have been almost entirely devoted to agricultural pursuits. By diversifying their labor, in the manner we have proposed, they insure their independence both of England and the North, while their labor, thus diversified, is made more profitable to themselves. The cotton is ready at their doors, and costs

them one cent per pound less than it does the Northern manufacturer. *The cost of transportation from the field to some Southern port, thence to Northern factories, the cost of insurance, payment of agencies, profits to manufacturers, and cost of retransportation back in the form of cloth*; all these are very important items, which go to swell the difference in the profits which the Northern and Southern manufacturer receive.

Nor are we without hope that the interest which has been excited on this subject will not be profitless. Already it is estimated that Georgia has in operation 40 cotton mills, using 80,000 spindles, and consuming 45,000 bales of cotton annually; in Tennessee there are 30 factories, and 36,000 spindles; in South Carolina there are 16 factories, 36,500 spindles, and 700 looms, consuming 15,000 bales of cotton; Alabama has 14 factories, 12,580 spindles, and 300 looms, consuming 9,500 bales of cotton. Thus in four States alone there are 98 factories, besides those in process of building, working 140,000 spindles, consuming probably 75,000 bales of cotton annually; and if they go on increasing for the next five years as they have for the past five, we may safely calculate on some 200 cotton mills in operation in the Southern States, consuming annually over 200,000 bales of cotton, and giving employment to some thirty or forty thousand operatives.

Thus the work has already commenced. Southern planters have the monopoly of this great staple. They will not hereafter be so entirely at the mercy of English or Northern purchasers. They can manufacture that description of goods mostly in demand by the planters themselves, such as osenaburgs, sheetings, yarns, jeans, and linseys, cheaper by far than their competitors. They can lay the foundation for future wealth and power as Great Britain did. They will add both to their commercial and political power. They will encourage the immigration of an industrious, hardy, and enterprising population. By this increase of population and of wealth, the Southern States will be enabled to bind themselves together by a net-work of railroads. They can perfect their internal improvements, increase the facilities of intercommunication, develop their boundless resources, and become what they long since should have been, among the richest, most active and powerful States of the Union.

"COAT OF ARMS" FOR THE STATE OF ALABAMA.

A DESIGN for a new "coat of arms" has been reported by the Alabama Legislature, and is thus described in the *Mobile Advertiser*:—

"A SHIELD QUARTERED.—In the centre, on a shield, a 'waterfall,' in proper colors.

"In the dexter chief, a 'branch of cotton,' in proper colors, on a gold field.

"In the sinister chief, 'emblems of mechanics, machinery, and manufactures,' in gold, on a red field.

"In the dexter base, 'emblems of commerce,' in gold, on a blue ground.

"In the sinister base, an 'ear of corn in the husk,' in gold, on a green ground.

"These represent the resources of the State; its water-power, its agricultural importance, represented by its two great staples, cotton and corn; its commercial facilities, and its capabilities in a mechanical and manufacturing point of view; these truly indicate wealth, a component part, but not the whole of *what composes* the greatness of a State.

"That which is wanting is supplied by the crest, which denotes *wisdom* and *strength*. A 'mailed arm, holding a sword barwise,' the emblem of *strength* and *power*, encircled by a 'serpent,' the emblem of *wisdom* and *prudence*.

"The *whole* 'arms' suggest the motto, '*These make us Great*.' Or, in other words, that the internal resources of the State, when developed and applied by the strength and

power of the State, governed by wisdom and prudence, constitute the essentials of a nation's greatness."

"These make us great"—such are the words ; but they should read, "These *would* make us great ;" for the internal resources of a State can never be developed while men are every where exhausting the land preparatory to its abandonment, as is the case in all the Southern States. If Alabama would be great, she must follow the advice of ADAM SMITH, in compressing her cotton and her food into cloth, thereby enabling them to be transported cheaply to distant markets, and enabling her to maintain direct trade with the producers of those commodities that she desires to consume, instead of finding herself compelled, as now, to perform all her exchanges through the medium of Northern and English ports, Northern and English ships, and Northern and English merchants.

No State in the Union possesses greater resources than Alabama ; but they will never be developed, nor will she ever attain the "strength and power" to which she now looks forward, until she shall have the "wisdom" to understand that protection is the real and only road to perfect freedom of trade, and the "prudence" to unite with her fellow-States in the adoption of that policy.

THE GOOD OLD PLOUGH.

[SUNG BY THE HUTCHINSON FAMILY.]

LET them sing who may of the battle-fray,
And the deeds that are long since past ;
Let them chant in praise of the Tar, whose days
Are spent on the ocean vast :
I would render to these all the worship you please,
I would honor them even now ;
But I'd give far more, from my heart's full store,
To the cause of the good old plough.

Let them laud the notes that in music float
Through the bright and the glittering ball,
While the amorous twirl of the hair's bright curl
Round the shoulders of beauty falls :
Yet dearer to me is the song from the tree,
And the rich and the blossoming bough ;
Oh, these are the sweets which the rustic greets,
As he follows the good old plough.

Full many there be whom we daily see,
With a selfish and hollow pride,
Whom the *ploughman's* lot, in his simple cot,
With a scornful look deride ;
Yet I'd rather take aye a hearty shake
From his hand, than to wealth I'd bow ;
For the honest grasp of that hand's rough clasp
Has stood by the good old plough.

All honor be then to those gray old men,
When at last they are bowed with toil !
Their warfare then o'er, why, they battle no more,
For they've conquered the stubborn soil :
And the chaplet each wears is his silvery hairs ;
And ne'er shall the victor's crown
With a laurel crown to the grave go down
Like the sons of the good old plough.

TOBACCO CULTURE IN THE UNITED STATES.

THE culture of tobacco is yearly becoming a business of increasing importance, particularly in the Middle and Southern States, where it has become one of the important staple products, and, under good and skilful management, constitutes one of the most profitable crops of the planter. While it is a product of every State in the Union, (California, perhaps, as yet excepted,) its cultivation, until recently, was principally confined to Virginia, Maryland, North Carolina, Kentucky, Tennessee, and Missouri, although in Connecticut and Pennsylvania considerable quantities began to be raised as far back as 1842. The product of that year was given by Mr. Ellsworth, Commissioner of Patents, who reported the crop of the various States and Territories as follows :—

States.	Pounds Gathered.	States.	Pounds Gathered.
Maine,.....	82	Alabama,.....	264,018
New-Hampshire,..	290	Mississippi,.....	145,212
Massachusetts,....	97,297	Louisiana,.....	118,146
Rhode Island,....	499	Tennessee,.....	28,289,171
Connecticut,.....	630,275	Kentucky,.....	45,494,083
Vermont,.....	781	Ohio,.....	5,264,766
New-York,.....	1,086	Indiana,.....	2,660,408
New-Jersey,.....	2,958	Illinois,.....	984,960
Pennsylvania,....	480,374	Missouri,.....	12,727,350
Delaware,.....	401	Arkansas,.....	212,266
Maryland,.....	21,199,696	Michigan,.....	2,725
Virginia,.....	59,627,369	Florida Territory,..	86,877
North Carolina,...	16,129,474	Wisconsin Territory,	362
South Carolina,...	55,654	Iowa Territory,....	11,153
Georgia,.....	141,523	Dist. of Columbia,.	65,654

Total amount in all the States and Territories,.... 194,694,891

The above report, our readers will perceive, was made ten years ago, since which time the culture of tobacco has increased in a very considerable degree. In Illinois, the Middle, and some of the New-England States, increased attention has been paid to the tobacco crop, which, in 1847, was 219,934,000 pounds, being an increase of nearly 25,000,000 pounds in five years; and in 1850, three years afterwards, the total quantity of tobacco raised in the States and Territories was nearly 224,000,000 pounds. Large as this quantity may appear to those who have not considered the subject, the demand for the article has not by any means diminished, but, on the contrary, continued to increase. It has been estimated by Mr. Ellsworth, that the quantity of tobacco produced in other countries than the United States is about 150,000,000 pounds; but such is its general use, and the increasing demand for it, that 1,000,000,000 of pounds from the United States alone would find a ready market, if it could be supplied of a good quality, and at prices not exorbitant, but which would be highly remunerative to the grower, leaving, as will be perceived, a wide margin for our enterprising planters to fill.

The increase of the consumption of tobacco in this country is a subject intimately connected with the interests of the planters themselves, as being an item of much importance in the increasing demand for its cultivation. The annual consumption cannot be less than 100,000,000 to 125,000,000 of pounds. It was computed, as long ago as 1836, with a population of nine

millions less than at the present time, that the annual amount paid by the consumers of tobacco in its manufactured state was \$20,000,000, which amount cannot now, at the lowest estimate, be under \$25,000,000. If we add to the value of this in the *leaf*, the value of the 100,000,000 of pounds annually exported, we shall find the amount actually received by our tobacco planters about \$16,000,000, which might probably be increased threefold, if the culture of the article received that attention which its growing importance would seem to warrant.

The culture of tobacco is every year extending itself into the Western States, and promises to become a most important article of export from the rich districts north and south of the Ohio. Says the *Cultivator*: "That tobacco can be grown in Indiana, Kentucky, and Tennessee, with greater profit than that attending the culture of wheat and corn, seems certain; and we doubt not that, as the cultivation progresses, and better methods of curing are adopted, the tobacco of the new States will rival in quality and celebrity that of the old. The plants on new land grow much more luxuriantly than on soils cultivated for any considerable time; but experience proves that the quality is not so fine. The best tobacco in any country is grown on lands in good condition, but not extravagantly rich, or highly manured."

In regard to the best method of cultivation, it may be difficult to decide in every particular, as some allowance must be made for difference of soils, climate, &c., &c. This would require a very prolix and tedious detail—altogether too much so for most of the readers of *The Plough, Loom, and Anvil*; nevertheless, we believe a general description of the mode and practice adopted by those who are most skilful and experienced in the culture of the tobacco plant will not be unacceptable to a large class of our readers; and we trust the facts shown will elicit some degree of emulation on the part of our agriculturists, in a matter that is very closely connected with their interests.

The time of planting the seed will differ according to climate. In the most southern portions of our country, the month of *January* is generally selected for that purpose, while every progressive step northward will, of course, change the season to that of a later date. In New-England, more particularly the valley of the Connecticut river, where the culture is carried on to a considerable extent, the month of *April* is the best adapted for putting the seed in the earth. The land for this purpose should be selected in a warm, friable, rich, but not too moist soil, with a southern inclination, if possible. This should be *new* ground, if possible, well grubbed and mellowed, after having a quantity of brush or other light, dry material burned over the entire surface, for the purpose of destroying insects and the seeds of noxious weeds, &c. After the plot has been carefully prepared, raise it into beds from three to four inches high, of a convenient length, and about three feet wide, the more easily to allow them to be kept clear from weeds, &c., from both sides of the bed. Sow the seed as thick as may be desired, about a table-spoonful to the square rod; rake carefully the surface, and roll or press down the earth thoroughly, that the soil may adhere closely to the seed. Should the beds become too dry, they should be watered and kept moderately moist until the young plants are ready for removal.

The best spot which can be selected for a tobacco field is where the ground is level, or nearly so, and the soil a rich, sandy loam, capable of absorbing and retaining moisture. The earth should be made perfectly mellow, either by ploughing or digging, at least twice before setting the plants. The ground being thus selected and prepared, it is ready for the reception of the plants. As soon as the leaves are a little larger in size than a dollar, which at the South will

of course be earlier than in New-England, they will be ready to transplant, which should be done with much care, in wet or cloudy weather. Should no such opportunity occur, they should be transplanted in the evening, and protected from the sun by leaves, or some similar covering. At the South, the palmetto leaf is generally used for this purpose. In the valley of the Connecticut river, where quite a business is made of raising the tobacco plant, if no convenient rainy season occurs near the time for setting the plants, the hill is made, about half a pint of water poured into it, and the plant immediately set. This method is said to be very successful, even in sunny weather, in that locality. The time for transplanting in that vicinity is early in the month of June, but at the South nearly two months earlier. After setting, the plants should be watered at least once a day, until the roots have become fixed or set in the soil.

The distance of setting the plants should be about two and a half feet apart in the rows, which should be about one foot farther than this, or three and a half feet distant from each other, which distance will admit the cultivator between them. Whenever the plants die, they should be replaced by others.

In their after culture, they require much the same kind of treatment as Indian corn; the plough, cultivator, and hand-hoe being freely and frequently used to keep down the weeds and loosen the earth. This should be repeated three or four times before hilling.

As the tobacco plant grows and develops, a blossom-bud puts out from the top, which is termed at the South *buttoning*. This top must be broken off, together with such of the upper leaves as are too small to be of any value. The plants are thus left usually from two to three feet high. From every leaf of the plant will shoot out suckers, which must also be broken off from the main stem, taking care not to injure the leaf by the operation. Late plants should be topped *lower* than those of early growth, as it will facilitate their progress and ripening. The plants should be suckered and cleared of worms, to which they are very liable, as often as once a week, until harvest time.

Cutting and curing tobacco is a business requiring much care and good judgment, in order to preserve the qualities of the crop. This we propose to make the subject of a future number.

WARLIKE TENDENCIES OF BRITISH FREE TRADE.

WE have on various occasions called the attention of our readers to the fact that British free trade, wherever found, is promotive of discord, war, and waste, and destructive of the happiness of those subjected to it. Ireland and India, Africa and America, at this moment, bear witness to the fact. Southern Africa is now being desolated by the Caffre war, and the very existence of the colony is now endangered. Upon the causes and conduct of this war a controversy has recently grown up between Mr. Samuel Gurney, an eminent Quaker merchant and philanthropist, and General Sir William Napier; and the last letter, just now published, confirms so fully the views that we have been accustomed to offer in reference to British policy, that we cannot omit to give it a place in our pages; at the same time desiring our readers to bear in mind that between all nations there is a perfect harmony of interests, or, in the words of Kossuth, *solidarité*; that war any where tends to do injury to men every where; and that they are therefore all directly interested in the adoption of measures tending to the destruction of the commercial centraliza-

tion established by Great Britain, the cause of more than half the wars of the world:—

"To MR. SAMUEL GURNEY.—Respectable Friend: If the reporter of thy discourse has put words into thy mouth which were not uttered, he is to be blamed; and so far thou art exonerated from the charge of injustice; but thou dost again, without solid foundation, vilify military men, saying, 'They are far too liable to look to the sword for the settlement of international disputes.'

"I say unto thee in reply, that since the days of Marlborough, military men have never had recourse at all to the sword for the settlement of international disputes, and it is not becoming to charge them with it as an offense.

"Mark, friend, political and commercial men *they are who have always had recourse to the sword*. The soldier makes war, but he does not declare it. The political men declare war, and *generally for commercial interests*; but when the nation is thus embroiled with its neighbors, the soldier saves it from danger. He draws the sword at the command of his country, but he has nothing to do with the sin, if it be one, of having 'recourse to the sword for the settling of international disputes.' He fights sternly to save the nation from the consequences of its own act, namely, declaring war; but he loves not war. Why should he? What does he gain by it? Death, wounds, pain, disease, premature old age and poverty, and insult when his services are no longer in request. Is that justice, friend? Is it creditable?

"Thou hast said, 'Military men are far too liable to look to the sword,' meaning, of course, more liable than politicians and commercial men. Was George Grenville, whose stamp act produced the American War of Independence, a military man?

"Was Mr. Pitt, who made the long wars with France, a military man?

"*Was the Honorable Company of Traders which, from a factory on the Hooghly, extended its bounds by wars to a mighty empire, composed of military or commercial men?*

"Was Warren Hastings a military governor? Was Lord Wellesley one? Was it a military governor who declared war against China, to enable iron-headed old rats to smuggle opium, in defiance of the laws of that great state and of morality?

"Were they military governors who commenced the Affghan war, the Punjaub war? Were those military or commercial men who established and carried on the slave-trade, with all its African wars—that trade which has recently been declared by Lord Palmerston to be unapproachable in atrocity, though all the other crimes of all nations, in all times, were heaped together for the comparison?

"And think not, friend, though I have confined my justification of military governors to Sir George Napier, that he only can claim exemption from thy censures. Inquire, and thou wilt find it is not so. Cease, therefore, if thou wouldst be counted among the just, to vilify soldiers. And, friend, thou hast not yet answered my question, *What manner of men be they who supply the Caffres with arms and ammunition?*

"Nov. 21."

"W. NAPIER, Lieutenant-General."

FOLDING SHEEP—ANIMALIZED MANURES.

THE folding of sheep, says Skinner's *Elements of Agriculture*, though not much practised with us, is very general in some countries, and is attended with many advantages. The system is best adapted to light, sandy lands, and to places difficult of access to the manure-carts. The fold is usually made with netting or light scantling, so arranged as to be easily taken apart. The form is square. The sheep are driven in every night, and the fold is removed when the ground occupied by it is sufficiently manured.

Among animal manures, we may mention flesh, blood, bones, horn, pou-drette, etc., as all being exceedingly valuable.

When a horse, a cow, or a sheep dies upon the farm, it should never be left to taint the air by its decay. It should be covered with mild lime, and then a heap of earth thrown over it of some eight or ten times its own bulk. The earth becomes saturated with the fertilizing gases, and furnishes a load or two of manure, well worth the trouble of making.

Bones have been known and used as a manure for a long time past; and

on the lighter soils, to which they are adapted, they constitute the most valuable auxiliary fertilizing substance that has yet been discovered. The bones are reduced, in a proper machine, to the size of half an inch, and strowed upon the land at the rate of twenty bushels to the acre. The effect on favorable soils is great and lasting; and they succeed best on all light lands, on limestone soils, and on the lighter loams. On all wet lands, whether clays, damp loams, or moist gravels, they do not pay. The inference from this is, that *bones are best suited for dry seasons and dry climates.*

OVER-PRODUCTION.

Look where we may, under the tariff of 1846, we find a state of things that is pleasantly styled by the advocates of the British monopoly of manufactures and trade, "over-production." There is too much wheat in the market, and therefore the price is so low that the farmer stacks his crop; there is too much cotton, and therefore the prices have fallen forty per cent. below those of last year; there is too much lumber, and too much iron, and therefore the furnaces are being sold out by the sheriff; too much cotton cloth, and therefore the cotton mills are closed; too much woolen cloth, and therefore the demand slackens; there are too many ships, for which reason freights are very low; and there are quite too many traders, the consequence of which is, that they are forced to take large risks, and ultimately to become bankrupt; and thus are the ship-owners and merchants experiencing the disadvantageous results from the adoption of a policy that was deemed sure to enrich them, however ruinous it might be to their unfortunate neighbors who had invested their means in mills, furnaces, or mines. We have now before us an account of the hide market of New-York, from which we take the following passage:

"The overplus of excessive and unnecessary manufacture will next year plague our trade, not only in unsettling prices, but in leaving over a large quantity of old, stale stock, injuring the general market, and finally winding up in ruinous losses. When we consider that nearly 1,500,000 sides more than our market actually requires have been manufactured and in process of manufacture, during 1850 and 1851, the present disastrous aspect of the Leather business finds no hope of improvement in 1852."

It might, perhaps, be supposed that this state of things had resulted from a great excess in the quantity of hides brought to market, but such is not the case. The total imports, foreign and coastwise, into New-York in the first ten months of 1850 were - - - - - 1,366,131

While those of the same months of 1851 were only - 1,320,880

Deficiency, - - - - - 45,251

What change has taken place in the *number* of hides imported, we have no means of knowing; but we do know that the *value* of imports four years since was almost as great as now, and yet there was then no complaint of glut of the market. The real cause of difficulty now existing is, that there is a gradual diminution in the consumption of all the commodities required for the convenience and comfort of man, because of a diminished power of purchase, resulting from the action of the present revenue system. We consume less cotton, and there is more that must seek a market abroad to lower the prices of the world; we consume less food, while our people are being driven from the mines, and furnaces, and mills, to become producers of food, and therefore it is that prices are low, and the farmers unable to purchase cloth or iron;

we consume less cloth, and the cloth manufacturer is unable to pay wages to be employed in the purchase of food; we consume less lead, and the lead miner can buy no cloth; we need no mills, and there is less demand for iron; we open no mines, and we build no furnaces, and there is less demand for labor; and thus it is that there is produced a glut of all the good things required by man, while thousands are almost perishing for the need of those things that so much abound, and hundreds of thousands consume far less than is needed for their comfort and their health. To remedy all this, to put an immediate stop to over-production, nothing is needed but the adoption of protection—efficient protection—as the road to perfect freedom of trade. Such a measure would at once produce a demand for labor to be employed in building new mills and furnaces, and opening new mines, and for working old ones; and a demand for food, and cloth, and iron, and fuel, would at once arise, that would put an end to all complaint of over-production. Can the agriculturists of the nation be benefited by a system that forces the whole nation to become producers of food and cotton, and causes a glut of both? Must they not be benefited by the adoption of one that divides the nation into producers and consumers—customers, instead of rivals to each other? It is really time that they should awaken to the fact that they it is that need protection.

BLESSINGS OF BRITISH FREE TRADE.

"A GENTLEMAN who has been traveling in the southern counties [of Ireland] gives a melancholy account of the absolute desolation caused by the continuous flight of the masses towards the land of promise at the other side of the Atlantic. In a district of some twelve miles of country, at the Kilkenny side of the county of Waterford, the population have altogether disappeared; there was not, he says, a human face to be seen during a drive of two hours; the very dogs had deserted, and the place looked as if some pestilence had swept away all traces of the inhabitants. As one of the natural consequences of the Celtic exodus, the profession of the law is nearly annihilated in all its branches; barristers and attorneys are threatened with one common ruin. Then Encumbered Court has all but swallowed up Chancery, with its very long fees, and longer delays and vexations."—*London Times*.

A hundred and sixty years since, William III. assured his Parliament that he would comply with their desire that he should "discourage the woollen manufacture of Ireland." From that day to the present, England has persisted in maintaining the policy of separating the consumer from the producer, and the results are now seen in the probable abandonment of the land by the whole population, except those who, by reason of disease, old age, or infancy, are compelled to remain behind.

Having exhausted the land and starved the people, the system next reduces the landholder to beggary, and the profession of the law is now feeling its effects; and thus is it established that, whether for good or ill, the harmony of interests is perfect, all waxing and waning together. It is a common impression that scenes of distress afford a great harvest to gentlemen of the law, and yet nothing is more erroneous. They grow rich as their neighbors are enriched, and they suffer when their neighbors suffer. To such of our readers as are connected with the practice of the law, we recommend a comparison of their receipts in the free-trade times of 1841-2, and the protection times of 1846-7, with a view to determine whether or not their receipts were as large when their neighbors were being ruined by British free trade as when they were being enriched by that American system of free trade which looks to making a market on the land for the products of the land.

THE CENSUS ON AGRICULTURE.

THE Philadelphia "North American" collates the following interesting statements from the agricultural returns in the census of 1850:—

In the extent of improved land within her borders, Pennsylvania ranks fourth in the list of States, New-York having 12,285,077 acres, Virginia 10,150,106 acres, Ohio 9,730,650, and Pennsylvania 8,619,631. Georgia follows next in order, with 6,323,426 acres. The large extent of mountain-land in Pennsylvania restricts her area of cultivation; and it is not, therefore, strange that Ohio, which has no mountains, should exceed us in the list. And although Virginia has, like us, extensive mountain ranges, occupying a large portion of her soil, yet it should be remembered that the State is much larger than ours, and longer settled. Still this matter is worthy of serious attention, and may be dwelt upon with profit, as showing the vast field for improvement which the interior of our State presents, not merely in the extension of roads and avenues, but in the settlement of wildernesses, the clearing away of forests, and the extension of cultivation. The northern and western portion of Pennsylvania presents, in not a few counties, the appearance of a trackless wilderness. Some townships, where the land is good, have scarcely any inhabitants. The proposed road to Erie from Sunbury would open a way through some of these parts, and, no doubt, soon attract thither a stream of population and trade.

But while the area of cultivation is thus comparatively limited, it is worthy of note that Pennsylvania occupies no mean position in an agricultural point of view, and, in fact, that our State ranks higher in this respect than has been generally supposed. While we rank fourth in the list with regard to the area of improved lands, we rank second as regards the value of farming implements and machinery, viz.:—New-York, \$22,217,563; Pennsylvania, \$14,931,093; Ohio, \$12,716,153; Louisiana, \$11,326,310; Virginia, \$7,021,658.

Thus it will be perceived that our agriculture is of a very substantial and superior character. In the value of live stock, our position is nearly as good, viz.:—New-York, \$74,672,356; Pennsylvania, \$42,146,711; Ohio, \$43,276,187; Virginia, \$33,607,362. In these two very important points, Pennsylvania is far ahead of every other State except New-York and Ohio; and in the matter of agricultural implements and machinery, is much superior to Ohio.

In the matter of wheat producing, our good old State stands at the head of the list, viz.:—Pennsylvania, 15,482,191 bushels; Ohio, 14,967,056 bushels; Virginia, 14,516,950 bushels; New-York, 13,073,357 bushels. When we remember the enormous calculations of the Cincinnati editors with regard to the quantity of wheat produced by Ohio, and the claim so repeatedly made for her, without denial, that she far exceeds any other State in the Union in the production of this cereal, we are a little surprised at the statement.

In the production of Indian corn, Pennsylvania, with 19,707,702 bushels, ranks above New-York, with 17,944,808; but these amounts are far exceeded by Virginia, Georgia, North Carolina, Alabama, Mississippi, Tennessee, Kentucky, Ohio, Indiana, Illinois, and Missouri. The production of the six last-named States is so great that we quote it, viz.:—Ohio, 59,788,750 bushels; Kentucky, 58,922,783 bushels; Illinois, 57,179,283 bushels; Indiana, 52,887,564 bushels; Tennessee, 52,137,863 bushels; Missouri, 35,719,042 bushels.

The leading tobacco growing States are—Virginia, 66,516,492 pounds; Kentucky, 55,765,259 pounds; Maryland, 21,199,281 pounds; Tennessee, VOL. IV.—31.

20,144,380 pounds; North Carolina, 12,058,147 pounds; Missouri, 17,038,364 pounds; Ohio, 10,480,967 pounds; Pennsylvania produces 857,619 pounds.

Alabama produces the most cotton; Mississippi ranks second, and Georgia third.

In the production of wool, Pennsylvania ranks third; New-York producing 10,021,507 pounds; Ohio, 10,089,607 pounds; Pennsylvania, 4,784,367 pounds.

Our State, again, ranks second in the production of wine; Ohio making 44,834 gallons; and Pennsylvania 23,839 gallons.

In the production of butter, Pennsylvania ranks second; New-York producing 82,043,823 pounds; Pennsylvania, 40,554,741 pounds; Ohio, 34,180,458 pounds.

In regard to cheese, we are exceeded by New-York, Ohio, Massachusetts, Connecticut, Vermont, and New-Hampshire. Pennsylvania produces 2,395,279 pounds, while New-York produces 49,785,905 pounds, and Ohio 21,350,478 pounds.

We make more hay than any other State, except New-York, viz.:—New-York, 2,714,734 tons; Pennsylvania, 1,826,265 tons; Ohio, 1,360,636 tons.

In flaxseed, Ohio ranks first, yielding 185,598 bushels; Kentucky next, 80,458 bushels; New-York next, 53,824 bushels; Virginia next, 53,333 bushels; and Pennsylvania next, 43,627 bushels.

In maple sugar, Pennsylvania ranks sixth in the list; New-York producing 10,310,764 pounds; Vermont, 5,159,641 pounds; Ohio, 4,521,643; Indiana, 2,921,638; Michigan, 2,423,897; Pennsylvania, 2,218,644.

PRESERVATION OF EGGS.

THE three following cheap and easy modes of preserving eggs for culinary use are taken from *Browne's American Poultry Yard*:—

Recipe No. 1.—Pack the eggs to be preserved in an upright water-tight cask, with their small ends downwards. Take eight quarts of unslaked lime, one half pound of common salt, two ounces of cream tartar; mix in water so as to bear up an egg with its top just above the surface; pour the mixture into the cask containing the eggs, and they will keep sound and good for two years.

Recipe No. 2.—Pack the eggs to be preserved in an upright earthen vessel or tub, with their small ends downwards. Procure, melt, and strain a quantity of cheap tallow or lard, and pour, while warm, not hot, over the eggs in the jar till they are completely covered. When all is cold and firm, set the vessel in a dry, cool place, till required for use. After the eggs are taken out, the grease need not be wasted, as it will serve for making soap, or many other household purposes.

Recipe No. 3.—Pack the eggs to be preserved in common salt, with the small ends downwards, and they will keep tolerably good for eight or nine months.

HOME-MADE FURNITURE.

THE simplest and cheapest kind of furniture, says Downing, by which an air of taste may be given to a cottage, consists of a plain box or bench, made of boards, by the hands of the master of the dwelling, stuffed with hay, corn husks, moss, or hair, held in place by a covering of coarse canvas, and covered with chintz by the mistress of the cottage. Seats of all kinds are made at very trifling cost in this way, so that, with a little ingenuity, a room may, by the aid of a few boards nailed together, a little stuffing and canvas, and

a few yards of shilling chintz, be made to produce nearly the same effect as one where the furniture is worth ten times as much.

The next step is to add square pillows or cushions to all the benches, seats or couches, in order that any person sitting upon them may have a support for his back without touching the wall. Another of the cheapest and simplest seats for a cottage, is the barrel chair. These chairs are easily made by sawing off a portion of the barrel, nailing on a few boards to form the seat, and leaving a part of the staves a little higher than the others to form the back or arms. To make the high-backed chair, the staves must be pieced out a little, the outside or rim of the back being confined in its place by a piece of hoop neatly applied. The seat and back are stuffed with any cheap material, covered with strong, coarse canvas, and covered with chintz.

CULTIVATION OF TEA IN THE UNITED STATES.*

A VOLUME, the title of which we give below, has just been placed in our hands by the author, who has been for some fourteen years a resident and cultivator in India and China. The author, FRANCIS BONYNGE, Esq., is a gentleman of extensive experience in the cultivation of the tea and other Oriental plants; and he has in this volume presented the results of his observations and researches, for the purpose of drawing the attention of the American people, and particularly the planters of the Southern States, which he believes to be well adapted to the production of tea, to the importance of introducing not only the great Chinese commodity, but indigo, coffee, and several valuable trees, into those States whose soil and climate are suitable.

Mr. Bonynge is evidently in earnest with his subject. The first part of his work is occupied with a review of the cotton trade, its past, present, and probable interests; and his conclusions are, that the cotton and rice must become more unprofitable by the reduction of the price, until positive ruin of the planting interest will be the inevitable result. A suspension of production, or the expedient of withholding part of the crop from market to make it scarce and raise the price, will not effect a permanent advantage to the grower; for the laws of trade are such, that, like the laws of hydrostatics, trade will find its level as water will. To attempt a defiance of these laws by such forced expedients, will only bring a disaster proportioned to the violation of nature's provisions.

A diversification of industry, therefore, and the introduction of new staples, suited to the soil, will open new sources of wealth, promote a better system of exchanges of products, and diminish the cost of transportation. Indeed, Mr. Bonynge maintains that we can produce tea for less than the cost of transportation itself.

The volume discusses the advantages of cultivating the several trees named in the title, gives a review of the opium trade, and in closing presents a picture of the "Present and Future of America," in which the author exhibits his views in relation to the Anglo-Saxonism of the United States, Emigration, Free and Slave Labor, &c. &c., wherein with candor and earnestness he submits the results of his experience and the convictions of his mind on these questions. For the present, as we shall take occasion to speak of the work again, in reference to its bearings upon our agricultural and economical inte-

* THE FUTURE WEALTH OF AMERICA: Being a Glance at the Resources of the United States, and the Commercial and Agricultural Advantages of cultivating Tea, Coffee, and Indigo, the Date, Mango, Jack, Leechee, Guava, and Orange Trees, &c.; with a Review of the China Trade. By FRANCIS BONYNGE. New-York: Published by the Author. 1 vol. 12mo, 242 pp. 1852.

rests, we will give our readers an extract from the work, in which the cultivation of tea in China and America is presented in contrast, and which contains information which will be not less interesting than valuable to our readers:—

It has been supposed that the Chinese could bring their barren mountains and hills under tea cultivation. They may do so; but they never can make barren or sterile mountains, nor any unfavorable soil, produce productive tea trees. It is a physical impossibility for the tea plant to be productive in other than a soil that would be capable of producing other things. Tea trees, as well as all plants, trees, and vegetables, require nourishment; and the richer and deeper the soil, the better.

The plant likes a loose, loamy soil, of a yellow to a reddish color. It does not like a hard, stiff earth, nor will it do at all in a dry, parched, or baked earth; sand with clay mixed, if deep, would do well; or a clay soil, with sand of two and one half to three feet deep, would do well also.

The root of the tea tree penetrates the soil downwards, in pursuit of sustenance; therefore, if the soil be not very rich, but deep, it will do well; and for the same reason, the tea plant can support a very severe frost, as its root extends below its influence. The root penetrates directly downwards, having none of any size extending horizontally on or near the surface of the earth, for frost to injure. In case of a very soft March, and moisture that might force out the young leaves, and then frost coming on in April, it would injure the young leaves, not the tree; and that crop might be lost, but the other three would be all safe.* However, the leaves of the finer teas are collected soon after budding, and might therefore escape; and in any case, it could be only a part of the young leaves that could be injured from an irregular night's frost. It happens in China that the April crop is at times more or less damaged by frost. However, I do not refer to a slight hoar-frost, but a smart night's freezing.

I have taken up a tea tree of some thirty-five feet high. There were but a very few horizontal weak roots. The mean or tap-root was near three and a half feet in length.

Mr. Ball had been told by the Chinese, that a vast improvement was effected in green tea, by bringing the plants from the hills into the plains, and by cultivation and manure; and that this practice had existed for six hundred years. The Catholic missionaries stated to Mr. Ball, that "the soil should consist of vegetable mould, sprinkled with sand, light and loose, and rather moist;" and again, the missionaries replied, "that the tea plant may be planted either in a rich or poor soil, sandy or garden soil, but that which is moist is most suitable;" and again they add, "Garden grounds, and the embankments of gardens or fields, are the most favorable." It may be seen from this, that what tea requires is depth of soil and moisture. "It is planted as a hedge-shrub, both in China and Japan, and along the ridges of the fields;" So say the Catholic Missionaries. The soil of Chusan is very light and sandy; tea is grown on it for domestic use, not for export. The soil of Amoy and Quang-Tong is a stiff, hard soil, unfit for tea. It is grown in both districts, but is of so inferior a quality, and there being no possibility to roll the leaf, which is hard and dry, and the returns from it are so trifling, that the natives will not manufacture it beyond the simple drying of the leaves, which they take into Canton in baskets for sale, and dispose of it at two to four cents per pound. This tea is very largely mixed with the good teas, and sold to England or America.

It is of these trees the Chinese give us seeds. Amoy is in the 24th deg.

* Four crops yearly.

N. lat., and Quang-Tong is the province of the city of Canton, N. lat. 23 degs.; and these plants being at hand, the Chinese give us as much seed as we require. The proper tea seeds are to be found some one thousand or twelve hundred miles from Canton, and two hundred and sixty miles from Shanghai. Traveling is slow work in China; there are no steamers or railroads there, and that part, up from the 25th degree of north latitude, is exceedingly mountainous. To get good seed is not to be accomplished. The East India British Government (and no party had the same opportunities) could not succeed, and brought round to Calcutta large quantities of these seeds, which they sent to the North-west Kamoun, and to the North-east Assam. I cultivated, and had several thousand plants; the Assam Company, too, the only other party cultivating tea, got in proportion. Neither the Company nor I could get any tea from them, except we stripped off all the leaves, and, like the Chinese, dried them, in which state we could find no market.

TEMPERATURE.

Tea will not bear great excess of temperature. It would live in the open air in England or Ireland, if it had time to take root. There is a large plant in Kew Gardens exposed, but I believe they give it some kind of protection in the cold season. I am of opinion that, with perseverance, tea might grow in Ireland, as fancy hedges, by a great deal of care being taken the first year. But these pots, in which all plants, at least all exotics, are condemned to linger out a few years of a miserable, stunted existence, are the bane of all success. Look at a tea plant, with its length of root, in an eight or nine-inch pot!

There is no country subject to greater extremes of temperature than China. In the month of April, even as low as 31 deg. of N. lat., the cotton and other annual plants are frequently destroyed by frost; and in the 29th deg. of N. lat., the tea plants are obliged to be covered over with rice straw, and bound with ropes, to protect them from frost and snow. Mr. Fortune says he saw the thermometer stand as high as 100 degs. in the shade, at Shanghai, and that it invariably fell to 12 degs. Fahrenheit in winter.

It is, in a great measure, the great difference in the altitudes of China, that causes so great varieties in its climates. Fogan, which is in 27 degs. 4 min. N. lat., is mild throughout, as the following will show:—

Fogan.	Mean of the four hottest months,	-	-	-	82 deg.	
"	Annual mean,	-	-	-	67 "	
"	Winter mean,	-	-	-	57 "	
Charleston.	32 deg. 45 min. N. lat.					
"	The mean of the four hottest months,	-	-	-	81 "	34 min. average.
"	The annual mean,	-	-	-	66 "	45 " "
Savannah.	32 deg. 5 min.					
"	Annual mean,	-	-	-	68 "	3 " "

Fogan is the southern point of the tea district, which stretches northward up to 31 degs., and among the high and cold mountainous regions. Probably in the interior of China, in valleys, it may be grown some degrees higher; and it is not to be doubted that it is grown higher for domestic use.

If the comparisons of the climates of America and China be followed up, it will be seen that the temperatures of 32 degs. 5 min. and 32 degs. 45 min. of Savannah and Charleston, are the same as 27 degs. 4 min. of Fogan, China. The highest altitude of Georgia, America, is under two thousand feet; the latitudes, from 27 degs. upwards, in China, are of a very great altitude, being

mountainous regions. The cold in America will be very much moderated when cleared of its continuous forests.

EXPENSE OF CULTIVATING TEA IN THE VALLEY OF ASSAM, AND IN THE TARTAR COUNTRY, AND RETURNS.

The following estimate of expenses of cultivation and manufacture of tea on one thousand acres, was made out for a member of Parliament, in 1850 :

One Superintendent, \$250 per month, yearly, - - - - -	\$3,000
" 1st Class Assistant, \$125, " " - - - - -	1,500
" 2d " " 75, " " - - - - -	900
Clearing and transplanting, and keeping clear, first year, 1000 acres,	4,875
Elephants, horses, &c., purchase, - - - - -	600
Building tools, &c, - - - - -	2,000
Total, - - - - -	\$12,875

SECOND YEAR.

European Superintendent, &c., - - - - -	\$ 7,200
Weeding, hoeing, and native head establishment, - - - - -	2,375
Manufacturing, say 40 lbs. tea to an acre, or on 1000 acres 40,000 lbs., at	2,500
Tea-chest and packing charges, \$2 per 80 lbs, - - - - -	1,000
Total, - - - - -	\$13,075

RETURNS.

100,000 lbs., at say 33½, ...	\$33,333
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THIRD YEAR.

European establishment, ...	\$8,700
Hoeing and weeding 1000 acres, ...	2,350
Manufacturing, say 200 lbs. per acre, of tea on 1000 acres—200,000	
lbs., at \$3 for 80 lbs., ...	7,500
Chests, packing, and charges to Calcutta, ...	5,000
Total, ...	\$23,550

RETURNS.

200,000 lbs., at 33½ cents per lb., ...	\$66,666
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FOURTH YEAR.

European and head establishment, ...	\$9,000
Hoeing and weeding 1000 acres, ...	2,350
Manufacturing, say 360 lbs. per acre, \$1 75 per 80 lbs., ...	7,500
Chests, packing, and charges to Calcutta, ...	9,000
Total, ...	\$27,850

RETURNS.

360 lbs. per acre, on 1000=360,000 lbs., at 33½ per cent, ...	\$120,000
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The 360,000 lbs. of tea would cost, by the estimate, \$27,850, or 7¾ cents per lb. for cultivation, manufacture, and transportation, some fourteen hundred miles, to Calcutta.

As the above items are condensed, it may be necessary to explain them. Salaries of superintendents on the fourth year were to be—superintendent, \$350; first assistant, \$250; second assistant, \$125 a month salary; making \$8,700, leaving \$300 for repairs of their houses, &c. Hoeing and weeding—

hoeing the land in the cold half of the year, and weeding it once during the rains.

To hoe an acre of land in America, two men are allowed, and of course it would not require more to cut down young soft grass, therefore there would be four men to each acre: for Indian labor there are allowed twenty men, at six cents per diem each: would make, on one thousand acres, \$1200 only. Then, in addition, there is allowed for native head establishment, support of elephants and horses, &c., and a very liberal margin for the managers to save to the Company.

Manufacturing item is made out at one man to pick 20 lbs. green leaf, wages six cents; and one man to manufacture 40 lbs. into dried tea—\$7,300.

Chest and packing, &c., all the wooden and leaden part of the tea-chest would be sent from London to Calcutta, and from Calcutta to Assam, and consequently be very expensive.

Under all these difficulties, which would not exist in America, the tea on the fourth year would not stand in more than $7\frac{3}{4}$ cents per lb., of which 2 cents might be saved in packages and transmission to Calcutta; making the expenses, at the very outside, only $5\frac{3}{4}$ cents per lb.

ACTUAL EXPENSES ON FORTY-FIVE ACRES OF TEA LAND IN THE TARTAR COUNTRY.

My own table, per month,	\$50.	
Hoeing once, and weeding once, 45 acres. 10 men to hoe, and 10 men to weed an acre; wages, 6 cents; for hoeing and weeding 45 acres,		\$54
Picking leaves. 1 man, 20 lbs. of green leaf; one acre produced (average) 128 lbs.; on 45 acres, 5,760 lbs.; at 6 cents for every 20 lbs.,		172
Manufacturing. 1 man to every 40 lbs. green leaf; 5,760 lbs.; at 6 cts. for 40 lbs.,		86
Chests. Per 80 lbs., (quantity put into a chest,) 50 cts., chest for 14,400 lbs. dried tea. (These chests were second-hand China tea-chests.)		90
Transit to Calcutta,* 25 cents per 80 lbs.,		45
Firewood and charcoal, 7 cents per 80 lbs. for 14,000 lbs.,		12
Horses, 2; elephants, 2; \$10 per month.		
Or yearly,	\$120 }	
Table expenses,	600 }	\$720, to be divided on 2000 acres, or say 1-40th part.
Total,		\$459

RETURN.

320 lbs. the acre on 45 acres; 14,400 lbs., † sold at 63 cents, wholesale, . . . \$9,072

* Of former year's teas.

† This tea, with a large quantity of other tea, was burned by the Tartars. The teas of the season prior sold for 63 cents.

14,400 lbs. of tea cost, all expenses included, say \$477, or $3\frac{1}{4}$ cents per lb. when it would be landed in Calcutta.

The following year, in the middle of the season, I was attacked by the Tartars, and the above tea, which, from want of boats, I could not ship to Calcutta, and all the tea then manufactured, and in process of manufacturing, was destroyed.

PROBABLE EXPENSE OF THE CULTIVATION OF THE TEA PLANT, AND MANUFACTURE OF TEA IN AMERICA, ON ONE HUNDRED ACRES.

I will not insert an item for superintendence, as the planter would know best the care and expense necessary to manage one hundred acres of land under cultivation. The price of seeds cannot be ascertained; nor is that of any import, as tea trees last twenty-five to thirty years; so the planter would have to purchase seed but once.

The seeds are sown the first year in beds, from which the young plants are transplanted out into the land intended for plantation. I suppose one half acre of seedlings would answer for one hundred acres of a plantation.

I have given the expense of the first year, on the estimate of 1000 acres of land, at \$13,075. Circumstances called for that heavy outlay. The company was supposed to be formed in London; the scene of operation near the west of China, under management of agents; and therefore, however little the work the first year, the establishment must be full. In an unhealthy climate, as is that of Assam, it would not be prudent to trust to one superintendent, as the natives will not work but when closely watched; and in case of sickness, there must be some person to take charge. The case is different in America, where every farmer may have his tea plantation attached to his house.

The expense the first year would be for hoeing, pulverizing, drilling, &c., half an acre of land, and sowing the tea seeds, say six men. I have calculated that every slave stands his owner in 21 cents a day. I will give the calculations at the end of the book.

Weekly, say one man one day for ten months, $43 \times 6 = 49$ days, at 20 cents, say \$10.

SECOND YEAR.

The transplanting might be done in October, November, January, and February, or as the weather would permit. Say the "tea year" is from 1st September to end of August.

Clearing underwood, say four men per acre, or 100 acres at 80 cents per acre,	\$80 00
Hoeing 100 acres, four men per acre, at 20 cents each, or 100 acres at 80 cents per acre,	80 00
Transplanting 100 acres, two men per acre, or 40 cents per acre,	40 00
Hoeing the earth round plants, two men per acre, 100 acres,	40 00
Plucking 160 lbs. of green leaf per acre, or on 100 acres 16,000 lbs., one man to pluck 30 lbs.; therefore, 30 lbs. would cost 20 cents, or 16,000,	106 60
Manufacturing, in the absence of machinery, one man to every 60 lbs. of green leaf=16,000 lbs.,	53 30
Packing cases for 80 lbs., say 50 cents, for 4,000 lbs. manufactured tea,	25 00
Sieves, of cane or bamboo, (I cannot say what they would cost here, but making in India would cost about 5 cents,) say 50 cents each, 30,	15 00
Firewood and charcoal, say 10 cents for every 100 lbs., or 4000 lbs.,	4 00
Cast iron pans, 4, at \$2 each,	8 00
Total expenses,	\$451 90

RETURNS.

40 lbs. per acre, or on 100 acres, 4000 lbs., which may be valued at 100 cents for some few years, \$4000 00 |

THIRD YEAR.

Hoeing or ploughing 100 acres of land, say	\$40 00
Plucking leaves—800 lbs. of green leaf per acre, one man to pluck 50 lbs., or 20 cents for every 50 lbs.—80,000 lbs.,	320 00
Manufacturing, in absence of machinery—one man to 60 lbs. green leaf, or 20c. for every 60 lbs.—80,000 lbs.,	266 60
Sieves, (additional, 100,) at 50 cents each,	50 00
Pans, (4 pans additional,) at \$2 each,	8 00
Charcoal and firewood,	20 00
Packing-cases, containing 80 lbs., 50 cents, 20,000 lbs. dried tea,	125 00
Total expense,	\$829 60

RETURNS.

Per acre, 200 lbs. of dried tea, or on 100 acres 20,000 lbs.; say, at the retail prices, or a little higher first years of introduction of tea into America, and afterwards 20 cents per lb., \$4000 00 |

FOURTH YEAR.

Hoeing over 100 acres, ...	\$40 00
Sieves, (additional,) 50, at 50 cents each, ...	25 00
Plucking leaves—say 1200 lbs. of green leaf per acre—on 100 acres, 120,000 lbs., at 60 lbs. for 20 cents, ...	400 00
Manufacturing 60 lbs. green leaf, at 20 cents, 120,000 lbs., ...	400 00
Charcoal and firewood, 10 cents per 100 lbs. dried tea, or on 30,000 lbs. manu- factured, ...	30 00
Packages for 80 lbs., 50 cents, on 30,000 lbs., ...	187 50
Total expense, ...	\$1082 50

RETURNS.

Per acre, 300 lbs., or 30,000 lbs. on 100 acres; say valued at 20 cents per lb., \$6000 00

It is necessary to say a few words on some of the above items :

Second year, I gave 4 men to clear brushwood, per acre.

“ “ 4 men to hoe the land, per acre.

“ “ 2 men to plant it, per acre.

“ “ 2 men for a second hoeing, per acre.

Total, - 12 men, per acre.

I believe planters will say that is sufficient. There is not much underwood in the American forests, compared to the forests of the north-east of India, where even four East Indians would clear an acre of brushwood.

After the second year, the land, if hoed once, would be sufficient, except there was a very rapid growth of grass or weeds; even the clearing away of such would be but the smallest decimal, not one tenth part of a cent per lb.

The plucking of leaves I put down 60 lbs. for one man. This is more than I used to get picked for me in the eastern frontier of India, but it has been done several times. I gave a certain amount for every 20 lbs. of green tea leaf, 8 pice, or about $6\frac{1}{2}$ cents; for 40 lbs., double that sum; and for 60 lbs., treble of it. Men, women, boys and girls, each picked 20 lbs. from 8 o'clock A.M. to 2 o'clock P.M. Many of the men, and some of the women, plucked 40 lbs.; and there were some who would go out early in the morning, and collect 60 lbs. by 6 o'clock in the evening. The work I gave men to hoe was one acre to ten men. Well, if two men can do that work in America, I should say one man would pick 60 lbs. of green leaf in the day; for if one man equaled five Indians at hoeing, I do not see why he could not equal the best Indian picker of leaves, for in both works it depended on the arms and perseverance. Picking leaves does not require the same physical powers as hoeing; it is more of application that is needed, and it is in that quality that Easterns are defective.

The manufacturing is easy, except that in the coarser kinds of teas it is difficult to roll the old leaves. One man can easily work as much as one will pick. I had, for making charcoal, cutting firewood, and manufacturing, three men to every five pickers of leaves. With machinery to roll the leaves, two men's labor would be economized.

In the fourth year, on the 100 acres, I have shown that 30,000 lbs. of tea cost, to manufacture, &c., \$1082 50, being but $3\frac{1}{2}$ cents per lb.; and that, by use of machinery, the quantity might be manufactured for $2\frac{2}{3}$ cents per lb., calculating the expense of slave labor at 20 cents per diem.

But calculating it at 50 cents per day, for free labor, it would be as follows :

Hoeing, 100 acres, 2 men per acre, ...	\$100 00
Sieves, (additional,) 50, at 50 cents each, ...	25 00
Plucking leaves, say 1200 lbs. per acre, of green leaf, one man 60 lbs., at 50c., or 120,000 lbs., ...	1000 00
Manufacturing, one man to 60 lbs. green leaf, or 120,000 lbs., ...	1000 00
Charcoal and firewood, 10 cents per 100 lbs. dried leaf, or 30,000 lbs., ...	30 00
Packages for 80 lbs., 50 cents, or on 30,000 lbs., ...	187 50
Total expense, ...	\$2342 50

30,000 lbs. for \$2,343, or 7 $\frac{1}{2}$ cents per lb.

This would be a means of not only enriching the cultivator, but of keeping up the price of labor to some \$180 a year, and would leave the cotton trade and rice trade to fewer hands. It would give employment to the many, encourage immigration, and give to all a greater degree of prosperity.

The trade of a tea-maker might be an item the first season, but after the first crop, every man in the business would be *au fait*. Therefore I do not put down any item for a tea-maker. The rolling of the leaves might be done by machinery, and would, at the first estimate, in which I allow the expense of a slave at 20 cents a day, be a saving of 1 $\frac{1}{2}$ cents per lb.; or in the second estimate, wherein I allow the hire of labor to be 50 cents per day, a saving of 3 $\frac{1}{2}$ cents per lb. Leaving the cost of labor 50 cents, still, with machinery, simple in its structure, and therefore of very trifling cost, tea would cost the planter only 4 $\frac{1}{2}$ cents per lb.

It is most desirable that these estimates be keenly scanned; and to enable all to do so, it will be well to explain the item of produce, so that naught may be taken on *ipse dixit*.

It is shown that in the second year there would be per acre, from 1,210 young plants, 160 lbs. of green leaf collected throughout the year, which would be equal to 2 $\frac{1}{2}$ ounces for each tree. Now, if that 2 $\frac{1}{2}$ ounces be divided by four, and any party take a young peach plant, for instance, and on the leaves coming out in April, pluck such as would not injure the tree; it will be found there would be but a few leaves required to make one half or even one ounce. But entering on the fourth year, the acre is made to produce 1,200 lbs. green leaf, or 1 lb. of green leaf from each tree during four crops. A good tea tree will grow up to a height of 30 to 35 feet; but for facility of plucking leaves it is kept to seven, eight, or nine feet in height. Any person so disposed may select a peach tree of that height, of most luxuriant foliage, and ascertain if he cannot get 1 lb. of leaves off it, if not in one collection, at least in four, made throughout a year.

The tea tree is an evergreen, and its foliage is so rich that the eye cannot penetrate through it; birds, or any thing of that description, could rest within its branches without it being possible to observe them. The tree throws out white blossoms of sweet fragrance, and when the tree is plucked, it throws them out irregularly. There is nothing so delightful or refreshing as the fragrance from a tea-house when manufacturing is going on.

A tea plantation once raised is a permanent property; it would not answer those rolling-stone habits of the modern Seythian of South America, who wanders from farm to farm, and from State to State. A tea plantation may go on for 100 years. A tree will last 25 years. When it shows any symptoms of decline, it only requires to drop a seed by its side. No labor, no care, no loss of time is thereby incurred. If a garden hedge be required, a

fence round a field, or ornamental hedges, it will answer all such purposes, while, at the same time, it would yield a most valuable crop.

Let it be inquired, if it is a newly-heard-of thing, that tea can be produced under some six cents per pound?—or if it be a fresh piece of information, having no other grounds for its truthfulness than the well-arranged figures of estimates?

EXPENSE OF CULTIVATION AND MANUFACTURE OF TEA IN CHINA.

It is known that all China teas sell on an average for twenty cents per pound at Canton, after crossing mountains and valleys for 1,000 to 1,200 miles, and passing through some six parties' hands, each making his profits; and if it be considered that the tea that cost at Canton twenty cents per pound, by the time it is retailed here averages 100 cents per pound, it will be seen the price is enhanced five times. Well, the transportation of tea from the districts in China to Canton is more expensive than is its passage from Canton to America, and it passes through on the China side twice as many hands as it does on this side of Canton; therefore, if the price of production be only on the other side of Canton enhanced in proportion as it has been on this side, it would leave the cost of cultivating, manufacturing, &c., at four cents per pound.

MANAGEMENT AND PROFIT OF FOWLS.

A LATE writer says, that since the exhibition of fowls last November, there has been a great interest shown in regard to the different breeds of hens, and their management. Most persons are trying to obtain the largest hens. I think that small hens are much more profitable as layers. They lay more eggs than the large breeds, and they can be kept at half the expense of those that are extremely large. My object is to obtain the hens that will yield the most eggs according to expense. I have purchased a pair of Poland Top-knots, from which to raise stock for the next year. They weigh about seven pounds to the pair.

I will now give you an account of my management the past winter. I keep twenty-five hens and a protector, of the native breed. My pullets that were hatched in April commenced laying in November, and those hatched in May began to lay in December. I have not kept an account of the number of eggs laid during the winter. The first week in January they laid ninety-one eggs. In the first two weeks in February, they laid one hundred and ninety-two eggs. I sold the eggs at fifteen cents per dozen, and during the winter the cost of keeping the hens was only equal to two fifths the value of the eggs.

I give my hens corn and cob meal every day, mixed with milk or hot water. I keep corn, barley and oats by them all the time, and also ashes, lime and oyster-shells. Raw meat was given to them dry every day. I kept all the egg-shells during the summer, and gave them to the hens during the winter. I kept my hens in a house twenty by fifteen feet, with a large window on the south side. I find no difficulty in making my hens lay in the winter; most people fail by neglecting to supply animal food as a substitute for the numerous insects which they devour in summer.

Hens should be left out a few hours every day when the ground is bare. The best layers should be selected as breeders, and the protector changed every year. The principal reason that some farmers find no profit in keeping hens, is because they only half feed them, therefore they are always in mis-

chief, scratching for food. When farmers plant corn, they should give their hens a good supply, and they will not scratch it up. If hens are well managed, they afford more net profit than any other stock. Young hens should always be kept over, as they will lay better in winter than old ones.

PLOUGH DEEP !

BY WM. OLAND BOURNE.

Ho ! Yeoman ! turning up the sod !
 Thrust with your might the sharpened blade !
 Turn up, turn up the heavy clod,
 And find the treasures underlaid !
 Not on the surface lies the boon—
 Not where the skimming idler plays ;
 Bring to the genial heat of noon
 The richer soil to catch the rays !
 Plough deep ! Plough deep !

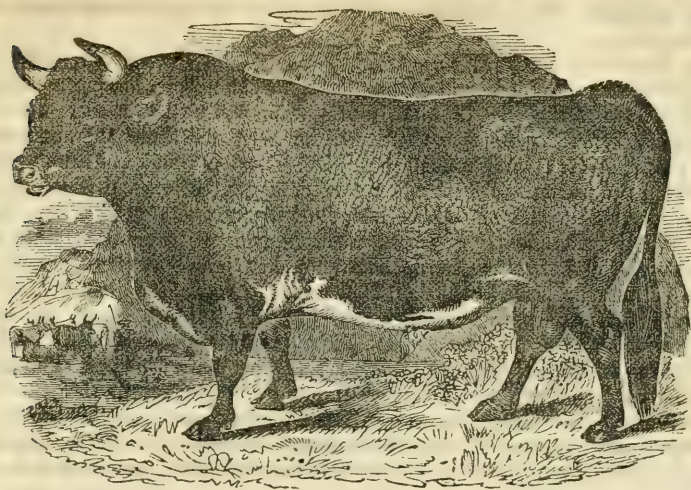
Give to thy sinewy arm the will—
 Give to thy toiling hand the might—
 Wealth buried deep shall come to fill
 The hands of him who toils aright.
 Turn up, turn up the under soil ;
 Turn to the light, and air, and sky ;
 A large reward repays his toil
 Who delveth deep where treasures lie !
 Plough deep ! Plough deep !

Ho ! Delver in the boundless field
 Where Truth lies waiting to be won !
 Not priceless treasures will she yield,
 While yet the task is just begun.
 Turn up, turn up, with patient hand,
 The deeper soil that hides the gold,
 And rubies with the glittering sand
 Thy longing eyes shall soon behold.
 Plough deep ! Plough deep !

Ho ! Battler with the old-time wrongs !
 Ho ! Laborer for the rights of Man !
 Cheer your bold hearts with bolder songs,
 And toil for Freedom while you can.
 Turn up, turn up, beneath the walls,
 Foundations lying broad and deep,
 Till dome with pillar prostrate falls,
 In dust and ruin long to sleep.
 Plough deep ! Plough deep !

Ho ! Worker in the world's domain !
 Ho ! Toiler in our mighty age !
 Before thee lies the open plain,
 In whose great strife thou canst engage.
 Turn up, turn up the pregnant earth !
 It waits to win the riper seeds :
 They shall, in Heaven's own time, give birth
 To glorious and immortal deeds !
 Plough deep ! Plough deep !

New-York, Jan. 22, 1852.



WEST HIGHLAND, OR KYLOE CATTLE.

THIS is a breed of cattle of Scottish origin, found in the Hebrides, or the county of Argyre, which retain, in a singular degree, their aboriginal character. They have remained unchanged, or have improved only by selection, for many generations, and the best specimens of the native stock of these cattle now bear the highest prices in the English market among the highland cattle of Scotland. Their value consists in being hardy, easily fed, living and frequently thriving on the coarsest pastures. They will frequently gain from a fourth to a third of their original weight from six months' good feeding. The proportion of offal is not large, and their flesh is most equably and beautifully intermingled with fat, close and firm in its texture, highly flavored, and so well variegated, or "marbled," that it commands the highest price in every market where it has been introduced.

By selecting the choicest of the stock, the West Highlander has been materially improved. The Islay, Isle of Skye, or Argyreshire beast, readily obtain in the English market a higher price than any other cattle reared in the highlands of Scotland. One of the most successful breeders of these cattle has so far improved the native breed, that he has often obtained one hundred pounds sterling (nearly \$500) for three and four year old bulls out of his stock, and in one instance received £200, or about \$1,000, for one of his best. The engraving at the head of our article is a very correct representation of a young Kyloe bull, and we doubt not it will be recognized by some of our readers who have seen the original breed in the western highlands of Scotland. As a breed of cattle for beef, they are evidently superior to any in this country; but for milkers they are not profitable, yielding but little more than half the quantity of milk, although the *quality* is superior.

Being a strong, hardy breed of cattle, and subsisting on coarse grass with but little care, requiring but little feed during the winter, when the weather is mild, and so readily and speedily fattened, we think their introduction into our Middle, and some of our Western States, would be of great value to the stock-breeders in those parts of the country, particularly where cattle are

reared mostly for the Eastern markets, where beef of a prime quality is in good demand. We would like to have some of our agricultural friends try the experiment.

In describing the West Highlanders, Youatt, in his valuable work* on cattle, remarks: "The Highland bull, or Kyloe, should be black, or pale red, the head small, the ears thin, the muzzle fine, and rather turned up. He should be broad in the face, the eyes prominent, and the countenance calm and placid. The horns should taper finely to a point, and, neither drooping too much nor rising too high, should be of a waxy color, and widely set on at the root. The neck should be fine, particularly where it joins the head, and rising with a gentle curve from the shoulder. The breast wide, and projecting well before the legs. The shoulders broad at the top, and the chine so full as to leave but little hollow behind them. The girth behind the shoulder deep; the back straight, wide, and flat; the ribs broad, the space between them and the hips small; the belly not sinking low in the middle, yet, on the whole, not forming a round and barrel-like carcass. The thigh tapering to the hock-joint; the bones larger in proportion to the size than the breeds of the southern districts. The tail set on a level with the back; the legs short and straight; the whole carcass covered with a thick, long coat of hair, and plenty of hair also about the face and horns, and that hair not curly."

CHEMISTRY APPLIED TO AGRICULTURE.

In the September number of the *Plough, Loom, and Anvil*, I observed a paragraph, headed "Science and Agriculture," which, in my opinion, is well calculated to create in the mind of the agriculturist a very erroneous estimate of the value of the science of chemistry in its application to agriculture. Although I do not entertain the slightest doubt of the facts therein stated by the writer, that the soil on Mr. Reverdy Johnson's farm, near Baltimore, was much exhausted, that it was analyzed by an able chemist, (Dr. David Stewart,) and found deficient in phosphoric acid, and that the fertility of this soil was so much restored by the application of the biphosphate of lime as to produce twenty-nine bushels of wheat per acre, yet I entirely differ from the writer in the opinion that this should be considered a "beautiful triumph of science." For I must be permitted to say, that I do not believe that the science of chemistry aided in the slightest degree in obtaining the result.

It appears to me very manifest that no benefit can result to the practical farmer from the analysis of soils until the chemist can first demonstrate the principles, or combination of principles, which constitute its fertility. This is a subject which still remains a mystery. Notwithstanding the scientific investigations bestowed upon it, no chemist has ever yet been able to ascertain what constitutes manure a fertilizing substance. Until lately, it has been believed to reside in its nitrogenous organic constituents; but this opinion, in a recent letter, has been repudiated by Liebig himself. He says: "If the nitrogen and carbonic acid formed by the decay and decomposition of the vegetable ingredients of manure were the cause of its fertilizing power, this ought also to be seen if the mineral substances were excluded. Direct experiments have shown that the nitrogen of the excrements can be assimilated by the plants, in the form of ammonia; but that ammonia, as well as carbonic acid, although it is indispensable for the development of all plants, can accelerate the growth

* Published by C. M. Saxton, 152 Fulton street, New-York.

of plants, and increase the produce of a field of grain, roots, and tubers, *only* if at the same time the mineral ingredients contained in the manure which is applied are in a state in which they are suited for assimilation. If the latter are excluded, carbonic acid and ammonia have no effect on vegetation." And these remarks are equally true with regard to the mineral constituents of manure. The sulphates, the phosphates, the nitrates, the muriates, and the carbonates cannot be demonstrated to be fertilizing principles when separate from manure itself. It is true they possess the power of increasing the growth of particular plants; but not one of them will feed plants in an exhausted soil.

In reference to the soil on Mr. Johnson's farm, Dr. Stewart says, "that one element only of a fertile soil was wanting, phosphoric acid." This opinion is certainly erroneous, for several reasons. First, That the fertility of this soil cannot be restored by the addition of the deficient quantity of the phosphoric acid only. Second, That the fertility of this soil can be restored without the addition of any substance whatsoever. If Mr. Johnson will cause a portion of this soil to be covered with plank, he will find its fertility restored long before the plank suffers decomposition. This could not be supposed to restore the deficient phosphoric acid, because we are taught that phosphorus is an elementary substance, which cannot be made by any chemical process. And we must possess the vivid fancy of a Petzholdt if we believe, with him, "that it can be derived from the atmosphere," although he admits that he is unable to detect its presence by any chemical test. Third, It cannot be demonstrated that the fertilizing value of manure depends upon the amount of phosphates it contains. Any other good manure would have imparted an equal fertility to this soil. Manure is the residue of putrefaction; and this is the only substance known to the practical farmer which feeds all plants in all soils and in every variety of climate. No substance whatsoever can be proved to be possessed of the fertilizing virtues of manure until subject to putrefaction.

The value of wine and vinegar is known to depend upon the attention paid to the circumstances necessary to develop each peculiar fermentation. Heat and moisture promote fermentation; but a cool, close, dark, and damp location, with a contact of air, is indispensable to the generation of the putrefactive process. It is certainly a fallacy to believe that the difference in the value of manure depends upon the difference in the chemical composition of those substances of which it is made. *The fertilizing value of manure depends solely upon the perfection of the putrefactive process.*

Mr. Kettlewell, of Baltimore, has published in the *American Farmer* his method of preparing bone-dust—phosphate of lime—and he may well claim for it fertilizing virtues equal to any manure; more especially if the sulphate of ammonia be present, which, he adds, "is made by adding sulphuric acid to fermented wine, and evaporating to dryness." Biphosphate of lime differs in no respect from this, except that the bones are dissolved by sulphuric acid, which does not prevent their speedy putrefaction.

If any portion of this land of Mr. Reverdy Johnson's be well manured, it will then be prepared to yield a crop, not of one kind only, but of any and every kind for the perfection of which experience has shown the climate of Maryland to be propitious. The poisonous plants will grow side by side with the most esculent plants, deriving their support in the same soil, from the same nutriment. Who can estimate the wonderful chemical process occurring during the lives of plants? What mind can comprehend the infinite chemical changes which this food experiences in its conversion into the most luscious fruits and the most deadly poisons?

The science of chemistry has conferred inestimable benefits upon mankind, in teaching, by the analysis of plants, the separation of their peculiar medicinal virtues. But how does this knowledge benefit the practical farmer? Does it teach him that, by the application of particular substances, he can increase the peculiar product of each plant? Certainly not. He knows that the only method by which he can increase the product of his crops, is by promoting the healthy and vigorous growth of the plants themselves, by the judicious application of manure—the only substance which he has ever known to produce this effect upon an exhausted soil. That the surface of the earth itself can be readily converted into the food of plants by shade alone, is a fact which cannot be controverted. This is the natural provision for vegetable life, and experience has taught the practical farmer that, like the natural provision for animal life, milk, it proves to be a far better nutriment than can be made of any other substance. Neither the food of animals nor the food of plants can be made in any other manner than that ordained by Providence.

Winchester, Va., Dec. 20, 1851.

R. T. BALDWIN.

FARMING STATISTICS.

DOCTOR A. HUNTON, Hyde Park, writes us as follows:—Mr. Frederick Theler, of Hyde Park, Lamoille county, Vermont, aged 63 years, being one of our careful and industrious farmers, and cultivating his farm to good advantage, I send you his statistics for the present year. Mr. Theler's *men's* help, beside himself, is—Nelson F. Theler, aged 40, living on the farm, a short distance from his father; another son 20, and one 17 years of age. They have this season had no help.

The farm consists of 160 acres, valued at \$5,000; 100 acres under improvement; mowing and tillage, 50 acres.

The stock consists of one yoke of oxen, and nine cows,	\$244 00
Three two year olds, \$17 each; five yearlings, \$10 each; eight calves, \$5 each,	144 00
Four horses—two \$100 each; year old colt, \$50; breeding mare, \$25,	275 00
Sheep and lambs (55) are valued at	72 50
Farming implements, valued at	180 00

Total amount of stock and farming implements,	\$915 50
The growth of the stock cannot be less than	\$100 00
Hay (55 tons) is \$275; straw and corn fodder, \$40,	315 00
Dairy—butter, (600 lbs.,) \$90; cheese, (275 lbs.,) \$15 50,	105 50
Wool, (115 lbs.,) \$39; corn, (185 bush.,) wheat, (50 bush.,) oats, (200 bush.,)	236 45
Potatoes, one third of a crop, injured by the rust, (250 bush.,)	50 00
Turnips, and other roots, (90 bush.,) \$20; pork, \$96,	116 00

It will appear the net produce of this farm is \$922 95

The season has been unpropitious for potatoes, in consequence of the rust, or rot; and the cool nights have been very detrimental to vines, of which here is no account, the product of which would not be less than \$10. The corn, from the same cause, falls short of a usual crop at least one fourth.

The warmest morning in July was 66°; the coolest morning was 42°; the

mornings during the month, a majority of them, were below 55°, always noted at sunrise.

The warmest morning in August was 61°; the coolest, 38°; seventeen mornings in August, the mercury ranged below 55°, that being marked temperate. You will perceive that vegetables requiring as much heat as corn and vines could not arrive at their usual maturity. September was more propitious for corn than the two preceding months; from the 1st to the 19th September, we had fifteen fair, warm days, mercury ranging as high as 83° at noon.

As short articles are more apt to be perused than prolix ones, I have in this case studied brevity. If such statistics are of use to you, I will supply others.

[Please forward them.—EDITORS.]

EXPERIMENTS IN THE USE OF PLASTER.

MESSRS. EDITORS:—Having read and heard a great deal said about the good qualities of plaster, I came to the conclusion to make some experiments in its application. I accordingly purchased a quantity and tried it in various ways, that I might be satisfied whether it would be useful to me or not.

First, I planted corn on ground that had grown oats the previous year; and I manured it at the rate of a shovelful of green manure to the hill. I then left eight rows, which I planted without manure, and put in a large spoonful of plaster before dropping the corn. I then planted two other rows without any manure. The corn came up and appeared the most promising where the plaster was put, until hoeing time. I then put plaster on the remaining two rows, excepting a few rods at one end. After a few weeks I could not see any material difference between that portion where the plaster was applied and where it was not. It remained so until the latter part of the season, when the manured corn got the start, and at harvest it was about twenty-five per cent. more productive than the other.

I next applied the experiment to potatoes. I spread the manure before planting, except a strip wide enough for six rows, four of which I planted with a large spoonful of plaster in each hill; the other two I planted without any manure or plaster. There was not much difference in the appearance of the tops, with the exception that during the first part of the season they were a little darker colored, and in the latter part somewhat smaller. When I dug them, I commenced on the two rows that had grown without plaster or manure. I dug far enough to get two and three-quarters bushels. I next dug two with the plaster application—dug the same distance, and got two bushels and two quarts. The other two measured about the same as the first two rows. I suppose that in ploughing and harrowing the manure became somewhat mixed with the earth in these rows, so as to make that difference in them. In these two there were considerable many rotten, *but none in the four manured with plaster alone*, which were dug first.

The potatoes that grew where the manure was put were larger, and produced about the same quantity of sound ones that were in the two rows where there was no plaster or manure, and about one bushel in every twelve were rotten. I think, if I had put plaster on the whole piece, I should have got about seventy-five bushels where I got a hundred; and if I had planted *without any manure*, I should have got about the same quantity, and all would have been sound.

I tried plaster on another piece of corn that was planted with the manure

spread. I put it on at the first time of hoeing, but could see no difference any time during the season. I tried some on oats after they had got up, sowing a strip in the field a few rods wide, at the rate of about three bushels to the acre. They looked better in the first part of the season, but at harvest-time I could not tell by the looks where the plaster had been sown. I sowed some on a "knoll" in my mowing field, leaving half of it untouched, but could not see any difference between the plastered portion and the rest of the grass. The ground on which I tried it was very light and dry.

One of my neighbors also tried it for the first time, and thinks he got one-third more of corn, and about the same quantity of potatoes where he used the plaster. Another neighbor tried it on corn, and it nearly destroyed it. There was no corn where the plaster was put, while on each side there was a good crop. His land was rather wet.

I think I shall try it again, and not give up an article that is recommended so highly with but one year's trial. If it does any better next time, you may hear the result. I think it would be well for those who have never used it to try it in such a manner as to know whether it is of use to them or not.

South Carthage, Me., Jan. 7th, 1852.

W. V. TAINTER.

REMARKS ON THE ABOVE BY THE EDITORS.

The action of gypsum or plaster as a manure, is twofold. It serves as a direct food for several of the cultivated plants, and also "fixes" and retains certain soluble substances in the soil which are necessary for their nutrition. Gypsum contains also sulphuric acid, which acts beneficially in decomposing and bringing into activity the "humus" and insoluble matter accumulated in loams or peaty soils. It is decomposed by oxalic and humic acids, and also by the carbonates of soda, potash, strontia, and ammonia. Thus new combinations take place, which are attended frequently with good results, but in some cases it may prove detrimental; for instance, when a soil is too rich in humus, in which case too much gypsum should never be used, as the sulphuric acid, although combining with another base contained in the soil, would form a salt easily soluble in water, by which the plants would receive too large a quantity of the acid at once, and consequently the effect would be rather detrimental than otherwise.

Gypsum, like other calcareous substances, should always be applied judiciously, and generally alternate with other manures. Many fail of succeeding from the fact of not being fully acquainted with these facts. In the cultivation of grain and green crops generally, it is not considered as valuable as when applied to clover, lucerne, beans, peas, &c. For Indian corn, rye, and buckwheat, it is sometimes used, and, under favorable circumstances for the development of its virtues, produces good effects. In some cases, gypsum fails of producing any good effect, from the fact that the soil already contains sufficient sulphate of lime, or is deficient in some other substance necessary for the growth of plants. On land that has been exhausted by cropping, and contains but a small quantity of vegetable matter, gypsum will prove of but little value; neither on stiff, clayey, nor wet soils is plaster considered a valuable manure. The soils upon which gypsum operates most beneficially, are those which are light, dry, and sandy, or porous and open to admit the rains and moisture, which act as a solvent, and convey the manure to the roots of the plants.

Perhaps, as a general rule, land that will produce successive heavy crops of clover without sensible diminution, does not require plaster; but if the clover crop fails, and the application of plaster brings it forward, it pretty conclusively proves that the soil requires it, and it can be successfully applied to other crops.

"The best time for applying plaster," says Browne, "is in the evening or morning, upon the dew, or in calm and cloudy weather, just before or after a slight rain; for, if the weather be very rainy, its effect will be lessened, if not altogether destroyed. When sown with grain, its ordinary dose is equal in bulk to that of the seed, say two hundred or three hundred pounds to the acre; but to grass lands, or crops of legumes, potatoes, and Indian corn, five or six bushels to the acre is commonly employed; and in a compost of earth or dung, or combined with other manures, such as guano, rape-dust, &c., it has been applied to turnips with marked effect. If a little gypsum be strewn over barn-yard dung, while being turned over, before using, its activity is very much increased."

SWAMP MUCK AS A MANURE.

ONE of the most productive sources of wealth to the farmer is his manure heap and barn-yard. By good attention to the former, and not neglecting the latter, there can scarcely be a serious lack of productiveness in the soils cultivated by any of our industrious and prudent farmers, particularly those who study the nature, principles, and adaptation of the manures which they apply to the soil, and the crops that they are designed to propagate. Many of our agricultural friends seem to understand fully the necessity of manuring their lands and enriching the soil which they cultivate, but either from a want of knowledge of the best means of doing this, or rather the knowledge of doing it at the least expense to themselves, they fail, either through want of judgment in the application, or a want of knowledge of the resources which they themselves possess. It is almost a universal law in nature, that whenever there is a want of some vital principle necessary for the sustenance and rapid development of the vegetable kingdom, the means to restore that principle may be found in the same locality where it seems to be wanting. On many a farm, portions of which, having elevated hillocks with steep declivities, appear, and are really divested of nearly every particle of vegetable mould, presenting a surface composed almost entirely of sand and pebbles, (nearly pure silex,) and consequently incapable, in such a state, of affording the requisite nourishment for vigorous vegetable life, may be found a meadow, swamp, bog, or pond, rich in decaying or decayed vegetable matter, increased by the surface mould, which has been for years, by rains, winds, and other causes, swept from the now denuded hill-sides and accumulated in these natural basins or reservoirs, requiring only to be returned in a properly modified form, and incorporated with the silex of the hillocks, to make them highly productive.

The value of swamp muck is not, in our opinion, properly appreciated or known by many of our farmers, some of whom have themselves rich deposits of this valuable manure on their own premises. An instance of this kind with which we are familiar will serve as an illustration. A gentleman from the city of New-York, a few years since, purchased in the town of Cranston, R. I., a beautifully situated farm of about a hundred acres, but which, in the hands of a parsimonious and unskillful manager, had become very unproductive. The purchaser (who, by the bye, was *only* a "book farmer") paid what those who resided in the vicinity considered a very dear price for the farm, and was looked upon as "taken in" in his purchase. He, however, removed from the city, took possession of his farm, and commenced making improvements on the premises. The fences were repaired, the buildings renovated, a new barn erected on an improved plan, with manure sheds, water tanks,

&c., for receiving and retaining the liquid manure from his stock, and other improvements were in a state of forwardness. His neighbors looked on with astonishment. Finally he commenced, with some half dozen hired hands, digging a ditch, or rather a somewhat expensive *canal* through a rise of ground crossing the only outlet from what appeared to the farmers of that vicinity to be a worthless bog of several acres. They began to consider him almost *non compos mentis*, until, the object accomplished, and the bog drained, there appeared to their astonished vision an immense bed of the richest and most valuable alluvial deposit of almost purely vegetable formation, in some places nearly twenty feet in depth, and capable of affording not less than 50,000 cords in quantity, which was really worth *more than half the original cost of the farm!* He immediately procured two or three schooner-loads of refuse lime from Thomaston, Me., at a comparatively trifling cost, and with a few sturdy Irish laborers, with their wheelbarrows, commenced on one side of the meadow, and erected one of the most magnificent compost beds that we ever beheld, using alternate layers of lime and muck, in the proportion of about four or five bushels of the former to a cord of the latter, forming, at an expense altogether of forty-five to fifty cents per cord, a valuable manure, worth at least \$1.50, and rendering his deposit of muck more valuable than a mine of gold on his grounds. So much for a little "book" knowledge.

Many meadows and bogs, in their present state not only valueless but pestiferous to our agricultural friends, abound in this valuable manure, which, with a little expense in draining, digging, &c., might become by far the most valuable portion of their farms. Swamp muck is almost entirely a *vegetable* deposit, either wholly or in part decomposed. This only requires to be removed, thrown up in heaps, and exposed to the air during the winter months, to form a light, porous, dark colored, crumbling mass, which in most instances, to give it its full effect, requires an admixture with earthy salts, alkalies, oils, &c., the addition of lime, potash, wood-ashes, stable-dung, refuse animal matter, &c. &c. With these, in proper proportions, we know of nothing more effectual or permanent in renovating barren soils, or promoting the growth of vegetation in all its various stages.

In a future number, we propose to enter more fully into detail, and give the various admixtures with muck which are best adapted to the circumstances and interests of our agricultural readers generally.

NEW BOOKS.

Salander and the Dragon: A Romance of Hartz Prison. By FREDERICK WILLIAM SHELTON, M.A. New-York. John S. Taylor, 143 Nassau street. 1852. 12mo, pp. 250.

This work, recently published by Mr. Taylor, is one of deep and thrilling interest. It is the production of a young clergyman of distinguished abilities, and will be read with a degree of feeling unsurpassed since John Bunyan first put forth his immortal allegorical work, the "Pilgrim's Progress." Since that production, perhaps a more beautiful allegory than "Salander and the Dragon" has never appeared. It is written with the view of exhibiting by the author the detestable vice of slander in its most hideous light, and holding up its enormity to the full view of every reflecting mind. "Its design," says a contemporary, (and that very truly,) "is to exhibit the pernicious effects of slander; and surely no one can contemplate this odious offspring of the depraved heart as it appears in this fanciful sketch without abhorring and despising the reality. The names of the several characters are significantly chosen, and the grouping is managed with a fine artistic effect. The style comports with that chaste simplicity which should characterize an allegory, in which the veil should not be so elaborately and closely woven as to hide the modest mien of truth beneath." The *Independent* justly observes: "It is a sermon that ought to be preached every where. It has a great truth

in it. Who does not know it? Happy is he who has not felt the bitterness of the mischief which this infernal imp is working in the world. And if Mr. Shelton had done nothing else than to write this book, he would have lived to good purpose. We think the story will be read when he ceases to be heard."

In conclusion, we would remark, that it is a work that should be placed in the hands of every person or child that can read in the country; and if it does not have a tendency to check that "unruly member," a slanderous tongue, we are greatly mistaken. It is finely embellished, and sold at \$1.

Temperance Tales. By LUCIUS M. SARGENT. New Illustrated Edition. Two volumes in one. Boston: Published by John P. Jewett & Company.

The author of these tales is a lawyer of fortune, either living or having an office in Boston. At any rate, he once had. That he is a man of genius and a well-read scholar must be apparent to all who examine the volume named. We think he commenced these tales more than twenty years since, either as tracts or in some periodicals, appearing at intervals of unequal length, as he found it convenient to write. So popular, however, were they, that the labor was continued till they made over six hundred large and closely printed pages in small type. Hundreds of thousands of them have been scattered over the earth. Editions have been published in England and Scotland, and several of these tales have been translated into the German language. Editions have also been printed at Botany Bay, and at Madras, in South India. So popular are they still, that the publishers pay a high copyright for the privilege of printing; and our impression is, that the sum thus received is appropriated to the temperance cause or other charitable objects. Hence the friends of temperance, and all others who purchase and read this unique volume, will not only find themselves richly repaid for the money it cost them and the labor devoted to it, but will know that a portion of this money becomes one of the best public charities the world has known. Although the leading object of the writer is temperance, yet his mind is so richly stored with the treasures of literature, that he is constantly, and, as it were, almost without volition, scattering on his pages hints and facts relating to domestic economy, religion, morals, and business.

A Catechism of Familiar Things. By EMILY ELIZABETH WILLEMENT. Carefully revised by an American Teacher. Philadelphia: Published by Lindsay & Blakiston.

We have ever considered works of this class among the most useful. There is too much of a disposition with modern writers and teachers to discuss and teach what is exotic, or above ordinary comprehension, and to neglect that which is about us, or is on a level with the understanding. Let the young first be made acquainted with the objects of real life, of every-day occurrence, of things we see, and hear, and eat, and wear; which is easily done, because such ones readily make an impression on the mind; and then other objects with which we are less familiar, and which are less easily understood, may occupy the attention. All persons conversant with mental philosophy know this is the true doctrine. Hence we cheerfully recommend the above work. Although designed for the young, most persons, even of mature age, will find not a few things in it hitherto unknown by them. It is for sale by Mark H. Newman & Company, 199 Broadway, New-York.

The Dew-Drop: A Tribute of Affection for 1852. Philadelphia: Published by Lippincott, Grambo & Company.

This is one of the newly coined candidates for public favor as a gift-book. It has every attribute for a hearty welcome—comely, gentle, and genial, like the dew-drop that glitters in the morning sun; and it is as good as it is beautiful. We have seen no annual with a better list of contributors; and the illustrations, if not as numerous as in larger and more costly volumes, are appropriate, and of a character suited to persons of approved taste. From articles generally so deserving commendation, it is not easy to give preference to any two or three over all others; if we were to do it, the preference would be to the "Blind Psalmist," by Mrs. E. C. Kinney, and to the "Love that Lasts," by the Rev. Dr. Cheever.

The American Muck Book. By D. J. BROWNE, author of "Sylva Americana," "Forest Trees," &c., &c. New-York: C. M. Saxton, 152 Fulton street.

The above title gives but a faint idea of the nature of the work, which is a compendium of the various fertilizers, both mineral and vegetable, whether used as simple sub-

stances or as composts; and the whole is laid before the reader in such a clear and practical manner, that it cannot fail to be instructive. The mineral and fossil manures, the various properties of which are so little understood, are fully treated of, and the views expressed of them exceedingly interesting, while the value of the so much neglected liquid manures is fully set forth. Those who, like ourselves, have had for some years a personal acquaintance with Mr. Browne, were prepared to expect something good at his hands; but we certainly did not expect that he would have been able to compress so much valuable information into so small a compass. We consider this one of the most valuable agricultural works which Mr. Saxton has placed before the public, and trust that it will receive a circulation commensurate with its merits.

The American Agriculturist: Designed to improve the Planter, the Stock-Breeder, and the Horticulturist. Vol. X. New-York: Published by C. M. Saxton, 152 Fulton street. 1851.

The present volume of this useful publication comes to us as usual in its neat and pleasing attire, looking as familiar and agreeable as ever, and, but for its own announcement, as promising for the future ten years as it did the first day of its existence. But we cannot resist the feeling of sadness that comes over us as we record its excellence and usefulness for the last time. This, the *tenth* volume of the "Agriculturist," closes the present series, and completes the cycle of its existence. We place this beside the nine preceding volumes on the shelves of our library, with feelings somewhat akin to those with which we consign some valuable and cherished memento of a friend to the most careful charge of a companion. The ten volumes contain a rare fund of valuable information, and contain an agricultural library in themselves; and we advise all who have not regularly supplied themselves with the work as it has been published, to procure it complete while full sets can be furnished.

Elwood's Grain Tables: showing the Value of Bushels and Pounds of different kinds of Grain, calculated in Federal Money, so arranged as to exhibit upon a single page the Value at a Given Price, from Ten Cents to Two Dollars per Bushel, of any Quantity from One Pound to Ten Thousand Bushels; with other convenient and useful Tables connected with Produce Transactions. By JAMES L. ELWOOD, Accountant. Philadelphia: Henry C. Baird, (successor to E. L. Carey,) corner Market and Fifth streets. 12mo, pp. 200. 1852.

We have examined the above work, with considerable care, and consider it a most convenient and valuable assistant to every grain buyer and seller. These Tables, the character of which may be seen from the title-page, which we have given in full, are certainly compiled with a degree of care and accuracy truly admirable. The arrangement itself has been pronounced by competent judges to be the most perfect, and the best adapted to the purposes intended, of any thing published; and we fully coincide with them in opinion. The fact that more than fifty of the most experienced grain measurers, merchants, and others, of Buffalo and Rochester, have highly eulogized and recommended the work, is a sufficient guaranty of its usefulness. We cheerfully concur in recommending its general adoption. The book is sold in this city by Charles Scribner, 145 Nassau street.

An Essay on Manures: submitted to the Trustees of the Massachusetts Society for Promoting Agriculture, for their Premium. By SAMUEL L. DANA. New-York: published by C. M. Saxton, 152 Fulton street. 12mo, pp. 60. 1852.

The fact that an edition of nearly *four thousand* of this work has been disposed of during the past season, is sufficient evidence of its value. It is, in our opinion, one of the best essays on the subject of manures, within a small compass, that has been published. Plain, concise, and directly to the point, it is just the book for every farmer in the country; and if every one who has not already possessed himself of it will do so, and attentively read and follow the instructions it contains, he cannot fail to realize a hundred-fold the trifling cost of the work every year. It is neatly published, convenient for mailing, and sold at the low price of fifty cents per copy. The work has been stereotyped by C. M. Saxton, of this city.

PAMPHLETS AND PERIODICALS.

FOURTEENTH ANNUAL REPORT OF THE PHILADELPHIA, WILMINGTON, AND BALTIMORE RAILROAD—BRIDGING THE SUSQUEHANNA.

WE are indebted to SAMUEL M. FELTON, Esq., President of the above Railroad, for a copy of the fourteenth annual report, submitted to the stockholders January 12th, and promptly issued by John C. Clark, Philadelphia. It gives a very encouraging view of the condition of the road, and presents a statement of the various changes and improvements that have been made during the year. The total receipts were \$718,010 42; the total expenses, including interest on all debts, were \$513,192 46; leaving a surplus of \$204,817 96, which has been appropriated to buildings, relaying the track with heavy T rail, new machinery, dividend of $3\frac{1}{2}$ per cent., &c. A large and commodious depot has been rapidly progressing at Philadelphia, four hundred feet long by one hundred and fifty wide, which the Company intend to make the best passenger depot, as they believe it will be the largest, in the United States.

During a part of the year, an express train, connecting with lines north and south, has been run, and will hereafter be continued as a permanent arrangement, the time being four and a half hours from point to point. This makes the time from Washington to New-York about twelve hours. The through fare from Baltimore to Philadelphia has been reduced from four to three dollars, which has resulted in a small falling off in the revenue from through travel; but while the reduction of fare has been twenty-five per cent., the loss to the through revenue has been only six thousand dollars during the year, a deficiency which will be more than balanced by the receipts of the present year, and presenting a hint by which other roads may profit. The gain on the local business has more than made up for the loss on the through business, so that, upon the whole, there is a gain in the receipts for the year of about \$27,000.

While we are gratified with the prosperity of this important road, the great thoroughfare between the North and South on the Atlantic borders, there is a serious and intolerable drawback to its efficiency and usefulness. While the Company are furnishing their road with large, heavy and superior engines, relaying the track with substantial rail, and erecting new accommodations for passengers and freight, and are, furthermore, the mail-carriers on the most important route on the continent, the road is liable to frequent and serious delays, and is subject to constant detention and loss of time for the want of a proper connecting link at one particular point of the road; we mean the Susquehanna river at Havre de Grace, at which place it is crossed by a ferry-boat, and offers an almost insupportable annoyance to travelers, and to the mails, by the loss of time in changing from the cars to the boat, and thence debarking to reënter the cars on the other side. The unloading and reloading here occasion a loss of time on every train (and there are four trains a day) which amounts to an enormous aggregate during the year, while the expenses consequent upon it are very heavy. We say this detention is insupportable. Years since, it would have been regarded with quiet contentment, as a matter of course; but at the present time, when every facility which science or art can furnish is brought into requisition to render transit more speedy, economical and pleasant, it is too far behind the age to be quietly regarded. The remedy for this detention is a strong and substantial RAILROAD BRIDGE, which will remove the difficulties, and allow the cars to proceed without delay.

But, were the half-hour or more, lost on each train, to be deemed a matter of inferior importance, a more urgent necessity remains. The river is liable to be choked with ice, and thus impede the passage of the boat; so that no reliance can be placed in winter upon the time: and further, the river is sometimes but partially frozen over, so that it is impossible to pass at all. In such cases the great United States mail is sometimes detained eight-and-forty hours, waiting for transport; and passengers must either take a tedious staging of a dozen miles up the river, or go fifty-five miles out of their way, over another road, or wait the movements of the wintry king! During the present season this obstruction has occurred more frequently than usual, and at this writing the river is as firmly bound as though it were located in more hyperborean regions. The mails are very irregular, and the annoyance to the people of the whole country, whose interests in any manner depend upon this route, is extensive and serious. The ice is, however, now firm enough to permit the business of the road to be carried on by means of horse-trains and sleighs. Is it not preposterous that on such a route twelve hundred passengers daily

should be obliged to depend on horse-teams for their accommodation, when the obstacle can be so easily removed?

Interruption to navigation is the only possible plea that can be urged against the construction of a bridge, and this would be so slight as scarcely to be noticed. A properly constructed *draw* would obviate this objection. How is it with other roads? The Passaic river is bridged at two different places to accommodate railroad travel, the obstruction to navigation being relieved by draws. The Harlem river, seven miles from the City Hall, New-York, is bridged to accommodate the Harlem and New-Haven roads, and is crossed, on a single bridge, by more than *thirty trains a day!* The draw obviates the objection to the bridge. The rivers around Boston, not to mention other places, are crossed by no less than three railroads within a quarter of a mile of each other. The bridges are constructed with *draws* to accommodate vessels, and as many as six thousand vessels have passed through one of these draws in a single year. Probably more vessels pass through one of these draws in a single week than would pass at Havre de Grace in a whole year. The business is conducted quietly and peaceably, and what little annoyances do occur, are submitted to patiently *for the public good*. This is as it should be, and we commend the example of the Massachusetts Legislature in this respect to the law-makers of Maryland.

The Legislature of Maryland has this matter in its own hands. They have but to grant the charter to the Company which has before been urged upon the attention of that body, and a substantial iron and stone bridge, inferior to none in the country, will be speedily built, to meet the exigences of the case.

The Company have made an estimate of the probable expense of the bridge, which will cost not less than six hundred thousand dollars, more than half a million of money. This vast outlay they are not only willing but anxious to make, in addition to their other liberal expenditures, for the public good. They ask the Legislature of Maryland to grant them a charter, which we trust will be done without delay, that the work may proceed with all possible dispatch. The detriment to the interests of commerce alone, occasioned by the interruption of the mails for a day or two at a time, is intolerable, and ought not to be patiently submitted to by the public. We cannot believe that the present Legislature will stand in the way of such a great public work; an enterprise which will benefit the State not less than the country at large. Surely they are not so short-sighted as to believe that the interposing of a barrier to the great interests of the country will be an advantage to their own popularity, or to the State whose prosperity they are sworn to promote. We trust that the present condition of the river, and the detriment to the public interests in their various relations, will be presented to the legislative body of Maryland in such a manner as to secure immediate action, and that they will, at their present session, grant the charter so imperatively demanded. That the result will be immensely advantageous to the State itself, we believe; that it will be so to the commercial prosperity of every section of our widely extended Union, is too apparent to admit of a doubt. **LET THE BRIDGE BE BUILT**, especially as *the public*, and not the company, are to be benefited by the result!

Tallis's Illustrated London.

This elegant pictorial work, in commemoration of the Great Exhibition of All Nations, is a beautifully illustrated descriptive guide to the great metropolis of England, which cannot fail deeply to interest and instruct its readers. Each part contains from fourteen to sixteen fine engravings on steel, in addition to the descriptive letter-press, and is published at 40 John street, at only 25 cents. Parts 12 and 13 are just issued.

Tallis's History of the United States.

Part 10 of this finely illustrated history has just been published. None who desire a well-written and elegantly embellished history of our country should fail to subscribe for it. Each part contains a beautiful map or two steel engravings, together with forty-eight pages of printed matter, and is published by John Tallis & Company, 40 John street, at 25 cents.

EDITORS' JOTTINGS.

IMPROVEMENT IN PREPARING PHOTOGRAPHIC PAPER.—Mons. Gustave Legray, in a recent number of the *Moniteur Industriel*, describes a new method of preparing photographic paper, which, after a great number of trials, he states he has succeeded in accomplishing, even beyond his own expectations. The preparation, he states, is adapted to almost any kind of paper, which, thus prepared, so much facilitates the photographic process, and helps to secure a satisfactory result, that he entertains not a doubt of its being generally adopted.

The substance used for this size is virgin wax, which is kept at a temperature of 100° centigrade, in a large, flat vessel, and the paper is immersed therein until completely saturated with the wax. The sheet of paper is then withdrawn, and laid between several pieces of blotting-paper, over which a moderately heated iron is passed, which causes the blotting paper to absorb the superfluous wax. If the paper is properly prepared, there will be no gloss whatever on its surface, and it will be perfectly transparent.

The waxed paper is then immersed in a warm solution, composed as follows:—

1000	parts of rice-water,
40	“ “ sugar of milk,
15	“ “ iodide of potassium,
0.80	“ “ cyanide of potassium,
0.50	“ “ fluoride of potassium.

The sheet of paper should be laid in this solution for half an hour, and it may then be withdrawn, and hung up to dry.

The paper is then immersed in a clear solution of aceto-nitrate of silver, which is thus formed:—

300	parts of distilled water,
20	“ “ acetate of silver,
24	“ “ crystallizable acetic acid,
5	“ “ animal charcoal.

The animal charcoal serves to render the paper more susceptible to receive impressions, and decolorizes the solutions when they have been previously used. The paper should remain three minutes in this solution, and in order to insure contact with the liquid, the two sides of the sheet should be rubbed over with a brush. The paper is then washed several times with distilled water, and well dried between pieces of blotting-paper. Paper thus prepared may be taken immediately into the dark chamber, and it is not necessary to subject the image to the action of gallic acid on its removal from the camera; this may be deferred till the evening, or even the next day, or the day following.

The paper may be kept in a dark place for more than a fortnight, without undergoing

any alteration; and in this respect offers greater advantages than any of the photographic papers hitherto known. The solution of gallic acid is composed of one part of gallic acid, half part (0.5) of azotate of silver, and 200 parts distilled water. The image is fixed, as usual, by the hydrosulphite of soda.

By this method Mons. Legray states that he is enabled to take twenty-five to thirty photographs a day. He submitted to the Academy a series of the specimens obtained by the process.

THE STEREOSCOPE.—The phenomena of vision have engaged the attention of some of the most distinguished philosophers, and various have been the theories propounded to explain the result of *single* vision with *two* eyes, which, of necessity, are under the influence of *two* impressions. Wheatstone has probably done more than any other individual in placing this phenomena in its proper light. His stereoscope presents the two images at the angle of reflection converted into a *solid* body, or rather, a body conveying to the mind an impression of *length, breadth, and thickness*. Sir David Brewster is stated, in the London Athenæum, to have recently modified this instrument by dividing a lens into halves, and placing each half so as to represent an eye—the distance between them being two and a half inches—very beautifully imitating the mechanical conditions of the natural eye. Such an instrument is used as a camera for photographic purposes; and daguerreotypes obtained in it, examined under a similar instrument, the binocular stereoscope, present a “mimic reality of the most deceptive character.” By this means, groups of figures, statues, etc., which, when looked at under ordinary conditions, present mere flat pictures, in the stereoscope become “beautifully raised in the highest relief, standing out from the surface in *perfect solids* to the deceived sense.” In fact, a group of portraits in this instrument exhibit all the fulness and roundness of life.

NEW-YORK AGRICULTURAL SOCIETY.—The meeting of this society took place on the 21st ult., at Albany, in the Assembly Chamber, Mr. Delafield, President, in the Chair.

The report of the Treasurer states that the cash on hand at the last meeting, and that received since, amounts to \$17,218 07, and the expenses to \$12,545 28. The balance on hand, in cash, is \$4,674 14; invested, \$7,600; plate for medals, \$644—total, \$12,318 14.

A committee of three from each judicial

district was appointed to report officers for the ensuing year, and to recommend a place for the next State Fair. The committee reported the following officers, which the society confirmed:—

President—Henry Wager, of Oneida.

Vice-Presidents—1st judicial district, James Monroe; 2d, Lewis J. Morris; 3d, A. Van Bergen; 4th, W. C. Watson; 5th, T. S. Flaxton; 6th, O. Chamberlain; 7th, Chas. Lee; 8th, J. A. McElwain.

Corresponding Secretary—D. B. Johnson.

Recording Secretary—E. Corning, Jr.

Treasurer—Luther Tucker.

Executive Committee—J. H. Corney, J. T. Blanchard, J. Butterfield, J. B. Burnett, W. Kelly.

The society decided that Utica shall be the place for holding the next State Fair.

Medals were awarded to several persons who received premiums at the late World's Fair.

To the Adirondac Iron Company, for specimens of steel, a gold medal.

To Thomas Bell, of Westchester, Gen. Harman, of Western New-York, and Wm. Hotchkiss, of Monroe, each a gold medal, for the best specimens of wheat.

D. B. Kirtland, of Rensselaer, silver medal for the best specimens of corn.

Mr. Pirsson, of New-York, a silver medal for the best piano.

Mr. Palmer, gold medal for specimen of an artificial limb.

Messrs. Allen & Co., of New-York, a gold medal for cutlery.

Prouty & Mears, of Boston, a gold medal for best plough.

Mr. McCormick, a gold medal for grain reaper.

Mr. Johnson, who represented the society at the World's Fair, gave a very interesting account of the success of the American reaper in England.

Willard & Co., of Oswego, silver medal for corn starch.

In delivering these medals, Mr. Delafield, the President of the society, presented a series of highly interesting remarks, principally in relation to industry and skill at the World's Fair.

THE WESTERN WORLD INSTITUTE.—We are pleased to learn that an institution with this title has been organized at San Francisco by Mr. C. A. Shelton and his associates, for the purpose of the promotion in that State of internal improvements, and the advancement of all the great interests of agriculture, commerce, horticulture, mining, manufacturing, and the arts and sciences; improvement in the breed of horses, cattle,

and all other useful animals; and, generally, the development of all the varied resources of California, and of the whole western coast and its neighborhood.

To the present museum, they propose continual additions of all the rare and wonderful productions of the State and its vicinity, in mineralogy, botany, conchology, entomology, ornithology, ichthyology, &c.; the inventions and improvements produced by mechanical and scientific industrial labor and skill, and the collection of every rare and wonderful product of the South Sea Islands, Asia, Australia, &c., both for utility here and for distribution and interchange with similar institutions in the Atlantic and other American States, and Europe. Connected with the Institute is a conservatory, embracing a large variety of the choicest grains, seeds, shrubbery, plants, fruit, and ornamental trees, and the most rare and valuable horticultural and agricultural productions. To aid in the promotion of these objects, they solicit from agriculturists, manufacturers, miners, inventors, and all others feeling an interest therein, contributions in any department of natural history, science, and domestic industry, with a particular description of the article contributed, its discovery, origin, properties, location, or manufacture, or other information relating thereto.

An annual fair will be held for the exhibition of natural, artificial, and scientific productions, and the awarding to subscribers of gold and silver medals, diplomas, and other appropriate and suitable testimonials of merit, for successful competition in any branch or department. Lectures, also, and addresses on agriculture, commerce, geology, and mining, together with philosophical, chemical, and other experiments, are intended to be given at the halls of the Institute.

Such an institution will be an honor to the projector, and, we doubt not, tend very essentially to the development of the immensely rich and valuable resources of California.

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GENEROUS OFFER TO KOSSUTH.—When Kossuth was in New-York, Messrs. TISDALE & BORDEN, agents of the Bay State Steamboat Company, (the Fall River route,) tendered him and his suite a free passage to Boston on board the steamer "Bay State," the finest vessel that floats upon any waters in the known world. This offer, which reflects much credit upon the gentlemen named, was in perfect accordance with the liberality and public spirit for which the company and their agents have long been distinguished.

THE REMARKABLE AZTEC CHILDREN.—The adage that "truth is stranger than fiction" seems to be fully verified in these remarkable children. They are attracting the attention and eliciting the admiration of thousands in our city, and indeed from almost all parts of the adjacent country. A contemporary pronounces them *the greatest living curiosities which the writer ever beheld*. There is no romance connected with the thing; it is all living, breathing, moving reality. They are the veriest Lilliputians ever witnessed in America, one being about ten, and the other seventeen years old; and their weight in pounds corresponds very nearly in number to the years of their ages. They articulate no sound, but we know no good reason why they cannot be "taught" both to talk and reason. They appear to be perfectly formed, with regular features, and the female, particularly, exhibits a very pleasing countenance. With fine flaxen hair and dark brunette skins, they display much vivacity and exhibit great activity. The back portion of the head seems to have been flattened for some purpose, but of this we are not quite certain. There is nothing repulsive or revolting in their appearance, but, on the contrary, the impression is rather pleasing than otherwise. A pamphlet containing a full account of these wonderful beings may be obtained at the exhibition. We invite our readers who have any desire to look upon two of the greatest natural curiosities in the country, to call at the Society Library Rooms, corner of Broadway and Leonard street, where every convenience and facility for the gratification of their wishes will be afforded.

CONCERTS BY THE HUTCHINSON FAMILY.—These favorite and universally known singers, who have delighted hundreds of thousands with their performances, have been giving a series of concerts in New-York. Their success is as great as ever; the popular appreciation and favor are as earnest and

as cordial as at any former time; and though ABBY is not among them—and who could forget her?—the brothers are fully capable of sustaining the interest of their concerts, and winning the applause of the public. We need not commend them to favor; they have long since established their own title to the good will and esteem of their countrymen.

WORKING OF THE LEAVEN.—A gentleman in one of the Eastern States who has sent us several new subscribers, writes us as follows, under date of January 21st:

"If you will send me two copies of the November number, I think I can obtain you several more additional subscribers. Nassau street in your city is indeed a wonderful place for the production of articles for human purification, theological, medical, and political. Townsend's Sarsaparilla claims to purify the blood, and eradicate from it all bad humors, except British Free Trade; and *The Plough, the Loom, and the Anvil*, eradicates this last of the vicious humors to which the body politic is subject. Two obstinate cases of long standing may be reported from this place, perfectly cured, with only three months' use of your excellent remedy."

ECONOMICAL INDIAN OR QUAKER CAKE.—A most excellent and nutritious article of diet may be prepared by every good housewife in the following manner: Take a common tea-cup once and a half full of sifted Indian meal, the same quantity of wheaten flour, a cup full of molasses, and sour milk sufficient to reduce it to the consistence of stiff paste; add to this a table-spoonful of ginger, as much soda dissolved, and a tea-spoonful of salt; incorporate the whole well together, put the cake in tin pans about one inch deep, and bake in a quick oven. This, eaten hot with butter, is a highly palatable, nutritious, and wholesome dish, and much more digestible than more highly and richly seasoned food.

OUR CORRESPONDENCE.

RENOVATING LANDS.—I have a theory somewhat new here, in the culture of worn-out lands, that I take the liberty of introducing. I have a field of about forty acres of warm oak land, that was formerly known to be very productive. This farm having been long in the hands of English gentlemen, and tenanted without any restrictions, it became much worn down and impoverished. When I purchased it, about twenty-five years ago, not being one of those persons who believe in no other mode of

good husbandry than slaving and spending yearly the products of a farm in buying and hauling manure, I adopted a different plan. I am acquainted with some of our best farmers, that have practised this mode of husbandry for twenty years or more, and with one managing the most productive farm of any in this vicinity, especially in hay. In answer to the question, "Have you made money?" he acknowledged that he had run himself in debt. One other gentleman told me that he had expended thousands of dol-

lars in buying, hauling, and using manure, and that he did not ever expect to realize the benefit of it. Now this shows that, in some cases, at least, this highly approved practice does not always result in gain. I will now speak a little of the revised mode of husbandry, as being better acquainted with facts, and hope not to be considered as boasting, but as merely giving my own experience. I have never bought a load of manure since owning my farm, twenty-five years, and although living but three miles from the city, and use only what we collect from different kinds of stock, on the farm, with composting. The forty acre field spoken of, when purchased, a good portion of it was lying waste, producing pennyroyal and mullein. This was a sad "eyesore" to me. I run over it and sowed it in grass as fast as I could consistently, and soon had a respectable sheep pasture, affording keeping for over one hundred sheep. In a few years, I could take up a piece of good swarded ground from this field, noted for good crops. I have the last season divided the lot into two equal parts, for the convenience of tilling one part, while I suffered the grass to grow on the other, and to remain until I see fit to plough this grass in as manure, with the expectation of its answering a good purpose, without any thing else. This is my theory, extending it either to sowing it, in the last process of harrowing the corn, with rye and grass seed, or grass alone.—ABEDNEGO ROBINSON, Portsmouth, N. H.

REARING MULES AND HORSES.—MESSRS. EDITORS: The agricultural statistics, I believe, show that your State excels ours in rearing horses, mules, and cattle, while we lead you in hogs and Indian corn. About six hogs are reared in Tennessee to one horse and mule in New-York. I am one of those who think a great increase and improvement could be, with little pains, effected

in East Tennessee, at least in the rearing of mules and horses; and for the benefit of my brother farmers in that locality, or elsewhere I will give my plan of breeding. The success I have had is well known to my neighbors, and the contrast of my plan to the one generally pursued by my acquaintances in East Tennessee, will be readily observed by them. I make it a rule to never put a suckling mare, or mare with a young colt, to the horse or jack. After the colt is about five months old, I wean it, which is done by letting it suck the dam at periods still farther apart, milking the mare, as occasion requires, till she is dry. About this time, I put to the horse or jack, and never am disappointed in getting a foal the first trial. This brings one half of my stock in the fall, and one half in the spring; it gives my breeders good health and condition; it is one year's advantage to the colt in growth and susceptibility of use. I must forego arguments to support my plan, but respectfully ask my farming friends to apply their own judgment in the contrast, and try it. I have a mare now on my farm which I know to be eighteen years old. I have never failed to raise a colt from her every alternate spring and fall since she was three years old, and she is sound and sprightly to-day. It is necessary that mares should be well kept on healthy food. My feed is meal and cut straw, with hay. I have a horse (our old shaft-horse) I know to be twenty-two years of age, and yesterday he took a fright in the shafts, and, in spite of the driver, ran with the carriage against a post, and broke both shafts, which I mention merely to show the propriety of feeding ground food to horses. A neighbor of mine sold me a very fine mare, because he could not get a foal from her. I took her to my friend, the late Daniel Carnichael, and told his man to put her to the jack *every morning* till she refused. About the ninth trial she was sent home, and I never failed afterwards to raise colts from her.—A. L. BUREM, Mile Bend, Tenn., Oct., 1851.

TOPICS OF THE PRESS.

EXPERIMENT IN RAISING CORN.—MR. WILLIAM K. KIMBALL, of Cornish, N. H., in a letter to the *Journal of Agriculture*, describes an experiment in raising corn as follows:

"In October, 1850, I turned over a piece of green sward. In the spring I manured it highly with green manure from the barnyard, ploughed it about the usual depth, and harrowed it thoroughly. I then marked the rows north and south for planting, three and a half feet apart, by drawing a chain.

"My seed was steeped six hours in a solution of chloride of lime, and I dropped three kernels in the hill, the hills eighteen inches apart in the row. In each hill was dropped a small handful of compost, made of plaster, unleached ashes, and hen manure say two and a half bushels of plaster, three of hen manure, and eight of ashes. The hen manure was taken dry, and pulverized, and mixed with the other ingredients all in a dry state, and applied in that condition. The corn was covered one inch deep.

"The corn came up quickly and grew

with great vigor, and I had an excellent crop, estimated at eighty bushels to the acre.

"To determine the value of the chloride of lime and the compost applied in the hill, I planted two rows through the middle of the field with the same seed and in the same manure, without either soaking or compost. The difference was visible at a glance, through the season; and on harvesting and weighing the produce of adjacent rows, I found that the rows planted with dry corn and without the compost, yielded fifty-seven pounds to the row less than the other; making a difference in sixty-four rows, one and a half acres, of three thousand six hundred and forty-eight pounds, or fifty-two bushels; or about thirty-five bushels to the acre. I should add, also, that, besides the great difference in the quantity, the corn from the steeped seed, manured with the compost, is vastly better than the other, and worth much more, pound for pound."

EFFECTS OF DRAINING.—In the New-York State Agricultural Transactions, Mr. Daniel Bates, of Sullivan, Madison county, says: "I have tried both open and covered drains, but have been successful with covered drains. I commence by ploughing deep in the driest part of the year, generally in the latter part of August. I can ascertain where the springy places are, and can better decide how to average my ditches. I place the ditches so as to touch all the portions of the soil that are moist, in order to drain it as completely as practicable. [Mr. Gates makes his ditches out of loose stones on his farm, and covers with flat stones or slabs. His ditches are from eighteen to twenty inches deep, and about fifteen inches wide. He has ditches covered with slabs which have been made eleven years, and are still in good preservation.]

"As to the expense, it is but little more than to finish properly a good open ditch with sloping sides. The objections to these latter ditches are, that they so readily fill up, and occasion much waste of land. *The results of ditching have, I think, increased my land at least three times its former value.* I have raised on this land, so reclaimed, the season after the ditching was completed, the largest crops on my farm, of corn, potatoes, barley, and spring wheat. Some of it is now in meadow, which yields the first quality of timothy grass, where, previous to its being drained, it was scarcely worth mowing and gathering, and the quality very inferior.

"Mr. Sutton had seven acres of low, wet land, which he cropped with oats for four years, putting on twenty-five loads of manure to the acre, each year. He then underdrained it, cutting his drains two and a half

feet deep, and filling eighteen inches with stone, then filling up with earth. Length of drain on seven acres two hundred and three rods; cost, thirty cents per rod. His crop, before draining, *with manure*, was thirty-one bushels per acre; after draining, first crop *without manure*, seventy-nine and a half bushels, and has continued to produce well."

AGRICULTURE IN FRANCE.—A correspondent of the *Republic* remarks: "A trip of six hundred and fifty miles, from the northern to the southern extremity of France, justifies me in the expression of my opinion that God's sun does not shed its rays on so fair a land, or one so thoroughly cultivated. The whole country is literally a garden. Every square foot, from the mountain top down to the lowest ravine, is made to produce something, if it be susceptible of it. Their mode of planting or sowing their crops, whether on plain or hill-side, produces the finest effect on the appearance of the landscape; the space allotted for each crop is laid out in squares or parallelograms with mathematical precision, and, whether large or small, the best garden could not be divided with greater accuracy. As there are no fences or hedges, and as the different crops are in various stages of maturity, you can imagine the variety of hues that meet the eye, and the magnificence of the panorama that stretches out in every direction as far as the vision can penetrate. I am sorry to add, in this connection, that seven eighths of the agricultural labor is performed by females, while two or three thousand stalwart men in uniform are idling away their time in the barracks of the cities and villages. In the absence of fences, cattle secured by ropes are driven about their pasturage by females, and the sheep are confined within their required limits by boys, assisted by a shepherd's dog. Speaking of cattle reminds me that, notwithstanding fresh pork is abundant enough in market, both in England and France, I have not seen a live porker in either country."

SALT FOR FIXING AMMONIA IN MANURE.—It is well known that in a close stable, where there are many horses, there is a very pungent smell, affecting the eyes and nose, particularly when the stable is being cleaned out. This smell is occasioned by the flying off of ammonia, which is the essence and value of manure, and which volatilizes or flies off at a very low temperature; even the warmth of the manure in a stable will send it off, and it goes off in great quantities by the common heat of manure in a farm-yard, whether thrown up in heaps or not.

A writer in an English journal describes a very cheap and simple remedy for this

Before you begin to clean out your stable, dissolve some common salt in water; if a four-horse stable, say four pounds of salt, dissolved in two buckets of water, and poured through the nose of a water-pot over the stable floor an hour or so before you begin to move the manure, and the volatile salts of ammonia will become fixed salts from their having united with the muriatic acid of the common salt; and the soda, thus liberated from the salt, will quickly absorb carbonic acid, forming carbonate of soda. Thus you will retain with your manure the ammonia, which would otherwise have flown away; and you have a new and important agent thus introduced, viz., the carbonate of soda. As this is a most powerful solvent of all vegetable fibres, and seeing manures have to be rendered soluble before they can act upon vegetation, it will be at once apparent that the carbonate of soda so introduced must be a most powerful and valuable agent.

VALUE OF PAPER IN ARCHITECTURE.—There is, says Dickens, "Household Words," a *paper* church actually existing near Bergen, which can contain nearly one thousand persons. It is circular within, octagonal without. The relieves outside, and the statues within, the roof, the ceiling, the Corinthian capitals, are all of papier-maché, rendered water-proof by saturation in vitriol, lime-water, whey, and white of egg. We have not yet reached this pitch of audacity in our use of paper; but it should hardly surprise us, inasmuch as we employ the same material in private houses, in steamboats, and in some public buildings, instead of carved decorations and plaster cornices. When Frederick II. of Prussia set up a limited papier-maché manufactory at Berlin, 1765, he little thought that paper cathedrals might, within a century, spring out of his snuff-boxes, by the sleight-of-hand of advancing art. At present, we old-fashioned English, who haunt cathedrals and build churches, like stone better. But there is no saying what we may come to. It is not very long since it would have seemed as impossible to cover eighteen acres of ground with glass, as to erect a pagoda of soap-bubbles; yet the thing is done. When we think of a psalm sung by one thousand voices, pealing through an edifice made of old rags, and the universal element bound down to carry our messages with the speed of light, it would be presumptuous to say what can and what cannot be achieved by science and art, under the training of steady old Time.

AGRICULTURE IN OREGON.—A letter from Umpqua Valley, Oregon, published in the *New-York Courier*, says the climate is so

mild in that quarter of the globe, that sleeping out doors is no hardship. Even in winter, the ground in the valleys never freezes, so that oats, potatoes, and barley, are sown in the fall. The wheat has the largest berry ever seen. Oats of a corresponding quality are raised *five years in succession from one sowing*, yielding at the rate of fifteen bushels to the acre at each crop. Indian corn does not do so well, on account of the droughts in August and September; but potatoes, turnips, and other roots, in the moist locations, grow to a great size. No insects or weeds trouble the crops of any kind. Apples produce abundantly, and plums, crab-apples, raspberries, (a large yellow variety,) whortleberries, (a red species,) strawberries, and several other berries of fine flavor, not known at home, are very abundant. Government *gives* to every actual settler on public lands in Oregon, six hundred acres in fee-simple.

HORSE-POWER DITCHING MACHINE.—The *Family Visitor* states that Mr. Charles Bishop, of Norwalk, Ohio, has invented and taken measures to secure a patent for a good improvement in ditching machines, whereby the old method of ditching by manual power is entirely thrown into the shade. His machine is worked by horse-power, and is provided with a revolving excavator, the shaft or axle of which lies in the direction of the length of the ditch. The excavator is of a screw form, and is operated by an endless chain. The ditch is cut of a semicircular form, and it deposits the cut clay or other kind of excavated earth in a box, from whence it is delivered at one side of the road by scrapers attached to the endless chain, the machine being propelled forward by a friction wheel, or roller, moving in the ditch, and operated by the excavator's shaft.

GROWTH OF WOOD.—The season of the year in which forests are cut off, is believed to have an influence on the succeeding growth. To give some test of this matter, the Plymouth County (Mass.) Agricultural Society offered several premiums. A report was made last year, which sets forth the conclusion that the nearer the season of the ascending sap, (spring,) wood is cut, the more flourishing will be its succeeding growth. The person who received a premium for this experiment states, that he is satisfied that the nearer the ground wood is cut, the better; the shoots will start and grow more thrifty, and are thicker, and less liable to split down. By cutting wood often, you insure not only the greatest growth of wood, but the greatest growth of money. Cattle should never be suffered to run on a wood-lot while trees are small.

EDITORIAL AND SELECTED MISCELLANY.

THE report of the Massachusetts Banks shows the following results, as compared with the report of 1845, before the discovery of California gold:

	1851.	1845.	
Circulation,.....	\$19,694,000....	\$14,339,000	Increase,....\$5,855,000
Specie,.....	2,478,000....	3,357,000	Decrease,.... 879,000
Capital,.....	38,265,000....	30,970,000	Increase,.... 7,295,000
Number of banks,...	130....	104	

The average proportion of specie since 1815, to circulation and deposits, has been \$1 to \$7 28. The present proportion is \$1 to \$13 18. . . . THE State Bank of Indiana maintains a circulation of \$4,681,993, the largest, we believe, of any one institution in the country; though the Bank of Kentucky and Northern Bank of Kentucky taken together are larger. . . . Gov. Wood, of Ohio, who was inaugurated on the 12th ult., expresses himself in favor of the maintenance of the compromise measures, and to the improvement of rivers and harbors. . . . THE *Buffalo Commercial Advertiser* announces the opening of the Buffalo and State Line Railroad from Dunkirk to the State Line. . . . THE principal productions of Florida are live oak, cotton, sugar, rice, indigo, oranges, figs, dates, grapes, limes, prunes, olives, &c. . . . LAST year, there were 342 boys in the Massachusetts State Reform School. . . . THE Portland Almshouse is without an occupant. . . . THE Cumberland coal trade in Maryland last year was 253,565 tons. . . . IN the State Lunatic Hospital of Massachusetts there is a preponderance of foreign paupers. . . . THE expenses of the National Armories at Springfield last year were \$271,308 33, and at Harper's Ferry, \$252,088 69. Total, \$523,397 02. . . . THE monster petition of Massachusetts for the passage of the Maine Liquor Law was conveyed to the State House lately in procession. . . . THE commerce of Cleveland grows with astonishing rapidity. The domestic exports last year were valued at \$9,817,897, and the imports at \$9,262,657. The cereals exported were alone worth \$3,898,131. . . . A PUBLIC meeting in favor of the Sault St. Marie Canal was held at Detroit on 5th ult. A memorial to Congress was adopted. . . . THE Calico Print-works at West Bloomfield, N. J., were burned down a few days since. Loss, \$30,000; insured in New-York. . . . THE Constitutional Convention of Delaware is to meet in March, 1853. . . . THE benevolent exertions of Miss Dix have incited the Buckeyes to pay attention to the insane. . . . THEY complain of cold weather at Savannah. The *Republican* says: "If the 'oldest inhabitant' has ever seen anything like it before, he should make it known at once, or for ever hereafter hold his peace." . . . THE taxes of the city of New-York for the present year, according to Mayor Kingsland's statement, will be \$3,500,000. . . . PREPARATIONS are now making for the construction of a submarine telegraph between England and Ireland. The cable will be sixty miles long. . . . SHIVERS PARKER, Esq., a well-known politician of the old school of Tammany, died in New-York on Thursday, the 22d inst. . . . A TEXAS paper says, that the western part of the State is being most rapidly settled by Protestant Germans. . . . THE glory of great men is ever to be rated according to the means used to acquire it. . . . GREAT numbers of partridges have been frozen to death in New-Jersey during the recent severe weather. . . . THE Marine Mission Society in Boston have issued, during seventeen months, 22,464 Temperance papers, and 145,747 pages of books and periodicals. . . . THE Moravians have now 68 stations, 281 missionaries, 66,557 converts and persons under instruction, of whom 20,373 are communicants. Of these, 3,285 are Greenlanders and Esquimaux, 450 Indians, 55,948 negroes and persons of color, and 6,874 Hottentots and other natives of South Africa. . . . THERE was lately a mass of native copper, weighing 4,700 lbs., (part of a mass of 55½ tons,) taken from the mines of the Minnesota Mining Company, near the River Ontonagon,

Lake Superior, and which was exhibited for a short time in Wall street, in front of the Exchange. . . . THE Baptist State Convention of Mississippi have resolved to raise \$100,000 for endowing a college in that State. . . . THE cost of patenting an invention in Great Britain is \$1,500; in the United States, \$30. . . . To act is easy, to think is hard. . . . WE shall have twenty-three eclipses of the sun in the course of the next fifty years. . . . It is said the fortunes of the Rothschilds are not less than \$735,000,000. . . . The *St. Louis Intelligencer* publishes a list of the most serious steamboat accidents on the Western waters during the past year. The whole number is 48. Of these, 26 were caused by striking snags and other obstructions in the river; 8 were the result of explosions, 6 of collisions, 5 of fire, and the remaining 3 were boats sunk in a storm. The aggregate loss of life is computed at 227. Sixty-eight were the result of collisions, and 148 of explosions. The greatest loss of life in any single instance was at the time of the explosion of the Oregon, in March last, when from 45 to 50 souls perished. The destruction of property cannot fall short of a million of dollars. . . . THE Faculty of Harvard College have elected Dr. Arnould, of Boston, to fill the vacancy in the Professorship of the French language. . . . THE *Charleston News* states that a number of gentlemen of that city have associated together for carrying on a large importing wholesale and retail dry goods business. . . . THERE were relieved or supported by Massachusetts, during the year 1851, 27,264 paupers, of whom 12,940 were foreigners, and 11,995 from England and Ireland. . . . THE United States steamships number thirty; four years ago, we had but one. . . . THERE are now forty-one newspapers published in Texas. . . . HALF the population of Wisconsin is said to be German. . . . BOSTON consumes daily six million gallons of Cochituate water. . . . THEY are about to connect Newfoundland with the United States, telegraphically. A great project, as the island is fifteen hundred miles east of us. . . . THE sides of stairs and passages on which are carpets and floor-cloths, should be washed with a sponge instead of linen and flannel, and the edges will not be soiled. . . . IN Cincinnati, on the 12th ult., the great case of *Irwin vs. N. Longworth*, involving property to the amount of over \$500,000, was decided in favor of the plaintiff. The case has been in court eleven years. . . . THERE were at the port of New-York one day lately 23 steamships, 119 ships, 93 barques, 91 brigs, and 187 schooners, colliers, &c. Total, 513. . . . THE census of Utah shows a population of 11,380. . . . You may glean knowledge by reading, but you must separate the chaff from the wheat by thinking. . . . THE steamboat Bay State, Capt. Brown, of the Fall River line, arrived at four o'clock one day in January, only about nine hours behind her time, notwithstanding she was obliged to cut her way through fifty miles of ice. . . . Two men were brought to justice the other week in Boston, and fined \$3 50 each, for playing cards on Sunday. . . . THE railroad across the Isthmus was opened on the 8th December, for part of the whole route. It was anticipated that it would be opened throughout in the course of two months. . . . THE mother of President Polk died in Columbus, Tenn., on the 12th of January, of apoplexy. . . . THE House of Representatives of Maine, on the 10th ult., passed, by a vote of 83 to 34, the following resolution:—*Resolved*, That we earnestly desire that the General Government of the United States may exert an influence, in some wise and proper manner, against all such intervention in the future as the Russian in Hungary. . . . THREE of the hands of the brig Rainbow, (a New-Haven vessel,) on shore on Point Judith, have been frozen to death. . . . THE Rev. Sebastian Streeter, of Boston, has married 3,174 couples in twenty-seven years—an average of over 100 per year. . . . MAJOR STICKNEY, formerly editor of the *New-Hampshire Patriot*, fell dead at Toledo, Ohio, a few days ago. . . . THERE were 2,550 marriages in Cincinnati during 1851. . . . THE failure of Josiah Quincy, of Boston, is announced, and is supposed to have originated in his connection with the Vermont Central Railroad.

The Plough, the Loom, and the Anvil.

VOL. IV.

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No. 9.

INTERNAL IMPROVEMENTS.

THE more men work in combination with each other, the greater is their *power* to help themselves. The more they separate from each other, the greater are their *necessities* for looking abroad for aid. Of the truth of this, no one can doubt, for it is in accordance with the daily experience of every man in the nation.

The more they work in combination with each other, the greater is the tendency to exchange at home, and thus to make a market on the land; and the greater is the tendency towards the enrichment of the land and the increase of its products. The more they separate from each other, and the more they render themselves dependent on distant markets, the greater is the tendency towards the exhaustion of the land, and the diminution of its products.

The richer the soil, and the larger its products, the greater is the population it can support, the greater is the consumption of food, and the larger the quantity of manure that can be returned to the land. The poorer the soil, and the less its products, the more scattered must be its population, and the less the quantity of manure that can be returned to the land. The exhaustion of the soil tends to produce poverty among its owners, and the abandonment of the land; diminishing instead of increasing the population, strength, and power of the community. The enrichment of the soil tends to produce wealth among its owners, and the constant increase of the wealth, population, and power of the community; and thus it is that Massachusetts grows richer and stronger every day, while Virginia steadily declines in her position as regards the other States of the Union.

The more men work in combination with each other—the more the loom and the anvil tend to take their places by the side of the plough and the harrow—the more will be the manure returned to the soil and the larger will be the product—the larger will be the quantity of exchanges made upon the spot, and the less will be the *necessity* for making exchanges at a distance—while the greater will be the *power* to go to distant markets, because there will be a constantly increasing tendency towards combining raw materials in the form of cloth, iron, lead, or copper; diminishing the bulk, and increasing the value, and thus facilitating the maintenance of commerce with distant men.

The less men work in combination with each other—the less the tendency of the loom and the anvil to take their places by the side of the plough and the harrow—the less will be the quantity of exchanges made upon the spot, and the greater will be the *necessity* for making exchanges at a distance—yet with this increasing necessity for going to a distance, there will be found a diminishing tendency towards lessening the bulk of the commodities to be

exchanged, by combining the food and the wool in the form of cloth, and the food and the ore in that of iron, lead, or copper; and the smaller will therefore be the amount of commerce, whether internal or external. The man who transports a ton of lead, transports a value of sixty or seventy dollars; while he who transports a ton of Indian corn from Illinois, transports a value of ten or twelve dollars. England passes all her food through that greatest of all mills, the human stomach, and therefore it is that she is the greatest of all the exporters of food. Illinois refuses to permit her food to pass through that mill, preferring to export it in the most bulky form, instead of permitting it to be condensed into the form of lead, iron, copper, or cloth; and therefore it is that her export of food, and that of her neighbor States, diminishes in quantity and value, notwithstanding their increase of population.

The greater the bulk of the commodities to be exchanged, the greater will be the *necessity* for means of transportation, the greater the cost of transportation, and the smaller will be the returns to the producer. The more compact the commodities to be exchanged, the less will be the *necessity* for transportation, the less its cost, and the larger will be the returns to the producer.

The greater the *necessity* for roads, the smaller will therefore be the *power* to obtain them; and *the less the necessity, the greater will be that power*. If, now, it be desired to see this exhibited in practice, the reader cannot do better than examine the following statement in reference to the increasing density of population in Massachusetts, and the constantly increasing tendency to combination for the purpose of increasing the productiveness of labor, as exemplified in the growth and present condition of their railroad system.

The population of that State was, in 1840, no less than *ninety-four* to the square mile; the total quantity having been 737,699 on a surface of only 7,800 square miles. The census of 1850 exhibits it as having no less than *one hundred and twenty-six* to a mile, the total being 994,499; and as this gives almost one person to every five acres, it is obvious that the *power* of exchanging on the spot must be very great, with corresponding diminution in the *necessity* for going to a distance; and yet we find them in possession of no less than eleven hundred and forty-two miles of railroad, being more than one mile of road for every seven miles of surface, on which were carried in the year, 8,856,656 passengers and 2,219,050 tons of freight; thus proving that increasing power to make exchanges at home was attended by increased power to go abroad to make them; giving in the highest degree the power to choose between the near and the distant market, *in which consists real freedom of trade*.

The population of Ohio was, in 1840, only forty to the square mile, or a total of 1,519,467 on a surface of 39,000 square miles. The space allotted to each individual was therefore almost two and a half times greater than in Massachusetts, affording abundant room for a rapid increase of numbers; and yet the late census exhibits a population of only 1,980,408, or *forty-nine and a half* to a square mile; the ratio of increase having been much less than that of the more densely peopled Massachusetts. Not only, therefore, is there less power to make exchanges at home, but the ratio of the growth of that power is less; and yet we find diminished power to go abroad for the purpose of effecting exchanges. With five times the surface, Ohio has completed but eight lines of road, 672 miles in length, and has in course of construction but about 700 miles; the whole, finished and unfinished, being but little more than that of the small State of Massachusetts.

Why it is so, is easily explained. The people of the latter State have made a market on the land, not only for all their own products, but for a vast quan-

tity of those of other States. They raise the bulky articles required for daily consumption, and bring from abroad those of which the earth yields less, and that will therefore bear carriage to distant markets; and they give to the land the manure yielded by the consumption of all this food; the consequence of which is, that its power to yield return to labor increases with each and every year. The people of Ohio, on the contrary, permit their coal and their ore to remain in the land valueless, while exporting their food in its rudest form, the consequence of which is, that they are steadily exhausting their land, and diminishing the return to labor; and as steadily flying to more distant lands, there to repeat the work of exhaustion. They *must* go to the distant market, for they have no other; *and yet this it is that they call free trade.* The one State brings the loom and the hammer to the side of the food, and the other does not; the result of which is, that while the one obtains increased returns from diminished surfaces and thus increases the *power* to obtain roads, the other obtains diminished return from increased surfaces and thus increases the *necessity* for roads, while diminishing the *power* to obtain them; and therefore it is that we find all the counties, cities, and towns of Ohio engaged in issuing bonds, by aid of which they hope to be enabled to combine their labor and their food for the purpose of obtaining means of intercourse with distant men. Had the policy of the nation favored the development of the internal resources of the State, Ohio would now make her own cloth with which to clothe the laborers who made her roads, and her own iron with which to lay them; and her citizens would not now need to mortgage their property to secure the payment of the vast amount of bonds recently created in the State, to pay for German and Polish wheat in the forms of British cloth and iron.

From month to month we hear of the emigration from Ohio to Wisconsin and Minnesota, while Missouri is, as we are informed, rapidly filling up with emigrants from Kentucky and Tennessee* and Texas, with those from Mississippi, Alabama, and other of the Southern States. With every such movement there is obviously increasing necessity for roads, which grows as men separate, while it decreases as they come together. The power to make them decreases with separation, and it increases as they approach each other. Separation is a consequence of exhaustion of the land. That exhaustion impoverishes its owner; and thus poverty and need for roads are always found in combination with the almost entire absence of the ability to make them.

The power of combination is a consequence of enriching the land, and through it the land-owner is enriched. It increases as men are enabled to live together; and that they may be so, it is indispensable that the powers of the land be maintained. Men, therefore, become rich as they are enabled to associate; and thus it is that with the diminishing necessity for roads there is a constantly increasing power to make them, as is so fully exemplified in Massachusetts.

To those who have not reflected upon the fact that our farmers are constantly carrying from the land the soil for which they purchased it, or upon the impoverishment that is a necessary consequence of this course of operations, the following extracts from the late Patent Office Report may be useful:

"The fertility of some, particularly in the planting States, is passing rapidly away; in others the progress of exhaustion is so slow as hardly to be observed by the cultivators

* EMIGRATION TO MISSOURI.—The wild south-western section of the State of Missouri is rapidly filling up with emigrants, mostly from Kentucky and Tennessee. Within three months past, the population of Lawrence, Newton, and Jasper counties is said to have increased one fourth in number by this means.—*Exchange paper.*

themselves. To keep within the truth, the annual income from the soil may be said to be diminished ten cents an acre, on one hundred million acres, or four-fifths of the whole.

"This loss of income is ten millions of dollars, and equal to sinking a capital of one hundred and sixty-six million six hundred and sixty-six thousand dollars a year, paying six per cent. annual interest. That improved farming lands may justly be regarded as capital and a fair investment when paying six per cent interest, and perfectly safe, no one will deny. This deterioration is not unavoidable, for thousands of skilful farmers have taken fields, poor in point of natural productiveness, and, instead of diminishing their fertility, have added ten cents an acre to their annual income, over and above all expenses. If this wise and improving system of rotation tillage and husbandry were universally adopted, or applied to the one hundred million acres now being exhausted, it would be equivalent to creating each year an additional capital of one hundred and sixty-six million six hundred and sixty-six thousand dollars, and placing it in permanent real estate, where it would pay six per cent. annual interest. *For all practical purposes, the difference between the two systems is three hundred and thirty-three million three hundred and thirty-three thousand dollars a year, to the country.*"

To some, this estimate may appear large, and yet it but little exceeds the amount expended for manure in England on the land producing potatoes and turnips, and on gardens, as follows :

3,500,000 acres of potatoes, at £7 18s., . . .	£27,650,000
2,000,000 acres of turnips, at £4 10s, . . .	9,000,000
1,600,000 acres of gardens, at £10, . . .	16,000,000
	£52,650,000
	Or \$252,720,000

The total value of animal manure produced in England is estimated at double this amount, or *five hundred millions of dollars, being far more than five times as much as the wheat crop or the cotton crop of the Union* ; and yet, of this most important product of the soil, nearly the whole yielded throughout the country is lost to those upon whose property it is produced, because of the absence of a market on the land for its products.

Dispersion and poverty are the necessary consequences of all this waste ; and the more men disperse themselves over the land, the greater must be their distance from market, the greater their necessity for roads by which to go to it, and the less their power to obtain them. From 1842 to 1847, under the tariff of 1842, there was a daily increasing tendency towards bringing the miner and the mechanic to take their natural places by the side of the farmer who produced the food, and the sheep-grazer who produced the wool ; and during all that time there was a steady growth in the quantity of the commodities that passed from the food-producing countries of the West towards the East, and a steady increase in the value of commodities obtained in exchange for them, as is shown in the following table, in which is given the quantity of merchandize that passed westward from the Hudson :

Purchased with the crop of 1842, . . .	113,686 tons.
" " " 1843, . . .	135,616 "
" " " 1844, . . .	144,742 "
" " " 1845, . . .	163,125 "
" " " 1846, . . .	215,185 "

The effect of protection to the farmer, in his efforts to bring the consumer to take his place by his side, was shown in the steady increase of his power to purchase iron for the improvement of his machinery of production, the consumption of which rose in this short period from 300,000 tons to 950,000 tons. The necessary consequence of this was, that the Western States were gradually recovering from their difficulties. Their coal and ore beds, and their vast

deposits of lead, were becoming daily more and more productive, and it needed but a few years' continuation of the same system to enable them to combine their own labor, their own food, and their own ore, for the purpose of making roads for themselves. Unfortunately, however, they were persuaded that it would be for their interest to adopt measures that it was well known would close the mills and the furnaces, the coal and the lead mines of the Union, and thus diminish the power of association at home; and what are now the consequences? Instead of feeding the whole people of Europe; instead of witnessing the export of food to England growing from almost thirty to three hundred millions, as was promised by Mr. Walker, we see it sinking in amount from year to year. What has been the tendency of things at home, will be seen by the following comparison of the receipts of food at New-Orleans in 1848-49, and 1850-51:

	1848-9.	1850-1.
Bacon, packages, ...	84,048	103,248
Pork, "	587,421	288,295
Lard, "	489,847	267,501
Beef, "	70,590	49,066
Corn, sacks, ...	1,706,312	1,298,992
Cheese, boxes, ...	54,287	78,894
Flour, barrels, ...	1,013,177	941,066

That the great diminution here observed is not compensated elsewhere, will be seen on an examination of the following table of receipts on all the canals of New-York for the year just closed, as compared with those of 1849:

	1849.	1851.
Pork, packages, ...	73,895	45,013
Beef, "	105,492	77,798
Corn, sacks, ...	5,120,270	7,670,345
Cheese, pounds, ...	42,097,818	25,598,945
Flour, barrels, ...	3,263,087	3,358,485
Wheat, bushels, ...	2,734,380	3,163,482
Butter, pounds, ...	20,880,409	9,564,268
Wool, "	12,731,403	10,517,408

Although the population of the West must in this period have grown from twelve to fifteen per cent., the quantity of commodities sent to market has diminished; and yet the price of wheat and flour has fallen so low, that the farmers are everywhere storing it, and paying heavy interest for loans to enable them to do so; and the reason why it has fallen is, that, after having crushed the domestic market, the foreign one has failed them; the total export of food to Europe having in the last fiscal year fallen to the pitiful sum of *eight millions of dollars*, with a prospect that it will this year be even less, as is shown in the following

Statement of the Shipments of Flour, Meal, and Grain, from the United States to Great Britain and Ireland, from the 1st of September last, to the latest dates:

From	Flour, bbls.	C. Meal, bbls.	Wheat, bush.	Corn, bush.
New-York, ...	292,756	....	767,738	232,171
New-Orleans, ...	5,851	....	....	23,719
Philadelphia, ...	33,590	1,680	66,059	1,500
Baltimore, ...	17,723	....	71,232	....
Boston, ...	10,136	....	....	....
Other ports, ...	5,100	....	22,000	18,077
Total, ...	365,156	1,680	927,029	275,467
About the same time last year, .	585,800	2,736	766,832	219,799

The tendency of the existing revenue system is that of producing a constantly increasing necessity for distant trade, with constantly diminishing power to trade; because it looks to the separation of the consumer from the producer, thus increasing the burden of transportation to be borne by the planters and farmers of the Union. Borne down by this weight, and unable to help themselves, we see the people of the West perpetually applying to Congress for appropriations for the improvement of rivers and harbors, and humbly soliciting, and generally in vain,* foreign banks and bankers—the Rothschilds and the Barings—for loans, by aid of which to purchase the food and the clothing required by the men whom they would employ to make their roads, and the iron with which to lay them. Their necessities are great, and their powers are small; and yet are they daily increasing the former and diminishing the latter, by scattering themselves still more widely throughout the West, and wasting annually on the road and in distant markets an amount of manure that, if applied upon their lands, would enable them both to improve their rivers and make their roads. The annual loss from this waste is equal to the whole cost of at least fifteen hundred miles of railroad; and in the last ten years it has been equal to that of fifteen if not twenty thousand miles.

For years past, Congress has refused all appropriations for works of internal improvement, and so is it likely to do while the people of Ohio and Indiana shall continue to increase their necessities by pressing still farther westward to seek new lands to be again exhausted; and such will be the case, because those communities will continue poor. Every man that leaves Ohio, Kentucky, Tennessee, Indiana or Illinois, diminishes the power of those States to help themselves. The General Government grants land to Illinois, Iowa, and Missouri, to enable them to attract the people of Ohio and Indiana; but it refuses to permit the people of these latter States to offer inducements to others to come and live among them, eating their food while converting ore and coal into iron. If they desire to become rich and strong, and to make themselves heard, it is needed only that they should pursue that course which would give value to their inexhaustible beds of coal and iron ore, and to the lead and copper mines of the States still farther west; by doing which they would be enabled to export their food in the compact form of lead, and iron, and copper, instead of the bulky one of corn.

Quite recently, Illinois has obtained a large grant of land to enable it to make a road; but Iowa is following the example, and Missouri desires a grant for a road that is to be extended to the Pacific, and that is to aid in carrying off the people of Ohio, Indiana and Illinois, and in lessening the power of those who are left behind. Every where the States of the West are seen, as they were in 1836, endeavoring to borrow money with which to make their roads; but Illinois has failed, although her grant amounted to 2,500,000 acres of land, perhaps as rich as any in the world. The reason for this is simple. She is destroying the

* We have seen letters by the last English steamer, to the purport that little or nothing can be done in the negotiation of large parcels or entire issues of American railroad bonds, in Paris or London. Unsuccessful attempts have been made in both cities, with some of the best-secured loans of the New-York short roads, and no encouragement was held out for large operations. In Paris, the feeling was adverse to every thing except French *Rentes*; yet it is quite certain a regular retail absorption is daily going on in New-York, of all the best descriptions of bonds, for French as well as Swiss, German, and Belgian account. This, however, bears no proportion to the vast issue of these securities, and little or no money really passes to the country. It is but part of the consideration paid for continental goods, a substitute for exchange when the rates rule high, to which our foreign friends are tempted by the large interest which these bonds pay, when bought at or below par.—*New-York Daily Times*.

domestic market for her products, and the foreign one diminishes; the consequence of which is a diminution in the value of her land, when there might be—and under other circumstances there would be—a large increase. Her export of food in the form of lead has fallen from 800,000 pigs to 325,000, when it should have risen to a million and a half; and had it so risen, she would now be enabled to make roads for herself, without depending upon the caprice of foreign bankers. “Help yourself, and Hercules will help you,” is a saying that should be borne in mind by the farmers and planters of the Union. Let them determine to make themselves independent, by bringing into activity the vast bodies of mineral wealth by which they are every where surrounded; let them bring the loom, the spindle and the hammer to their sides; let them thus create a market among themselves, and they will find no difficulty in obtaining all the aid they need desire to enable them to reach the most distant markets of the world.

So, too, will it be with the great copper producing region. Already it furnishes a market for vast quantities of produce that otherwise would go to swell the surplus for a market for which we are now, by aid of the tariff of 1846, rendered dependent upon *the steadily diminishing market of Britain*. What is the condition of the trade with that region, and what are its wants, may be seen by the following article from the *Lake Superior Journal*:—

“It appears that, in 1845, the copper shipped thence amounted to but twenty-three tons. In 1850, it had been swelled to more than thirteen hundred tons; and the estimates of parties on the spot lead to the belief that, during the next season, the yield will be more than doubled. We are without any statement of the population, but, though sparsely settled, it must be considerable in the aggregate, judging from the circumstance that, in the course of the present year, the quantity of flour imported for consumption was not less than 100,000 barrels, or about 12,000 tons; and this is understood to be utterly insufficient to sustain the resident population throughout their long and rigorous winters.

“The *Journal* notices reports to the effect that in some districts absolute famine has already commenced, and the statement is confirmed by information that has appeared in several of our Wisconsin exchanges.

“The means by which this trade is carried on are difficult to a degree almost beyond conception. For these difficulties there is but one remedy, and that is the construction of a canal at the Sault Ste. Marie, connecting the waters of Lake Superior with those lower in the chain, and of sufficient capacity to admit the passage of the largest vessels engaged in the trade of the Northern lakes. The length of it would not be more than a mile; and the cost of the whole work is estimated by competent authorities at less than half a million of dollars. Argument is not needed to prove that such an expenditure would immediately produce results of the highest importance to the locality and to the country generally.”

Here is a market for food, capable of almost indefinite extension, and, that it may be so extended, it is needed only that the farmers of the West should determine to protect themselves in their efforts to bring among them the men who will eat their corn while mining their lead and their copper. That done, they would have no difficulty in making their canal themselves. We should then cease to hear of famine on Lake Superior, while the farmers on Lakes Huron and Michigan were being ruined for want of a market for their corn and their wheat. We beg of them to reflect that—THE FIRST OF ALL THE TAXES TO BE PAID BY COMMODITIES IS TRANSPORTATION. The corn that is worth sixty cents in New-York is worth but twelve and a half cents in some parts of Tennessee. Let the price in the former sink to forty cents, and the Tennessee farmer will waste it rather than send it to market, for it will not pay the cost of transportation. Let that cost be reduced to thirty cents, and the corn will still be worth ten cents, although it should continue to be worth but forty in New-York. Bring the market nearer, so as to reduce the trans-

portation to twenty cents, and the price in Tennessee will rise to twenty. Bring the market to the spot; make a market on the land for all the products of the land, and the price in Tennessee will be as high as in New-York.

The planter rejoices in low freights, because all that is thus saved is added to the value of his cotton. He knows that *he it is that must pay the cost of transportation*, and that that is the tax which, high or low, *must* be paid before he can have any thing for himself.

The commodities of which the earth yields by tons, such as potatoes, onions, carrots, turnips, and hay, will not bear transportation. They must be eaten on the ground or near it. Make a market on the ground for all the bulky commodities that can be raised, and the very fact of their bulk constitutes a large bonus to the farmer. They cannot be brought from a distance except at heavy cost of transportation, and the price will be high because of the little power of interference from abroad. An acre of land will yield four hundred *bushels* of potatoes, or even six hundred *bushels* of turnips, whereas it is good land that yields four hundred *pounds* of cotton, or twenty bushels of wheat to the acre. It will now not be difficult to see how it is that the British system of policy operates as a "great discouragement to agriculture" in all those countries subject to it; nor why ADAM SMITH so strongly urged upon his countrymen that, in preventing the artisan from going to the food, they were guilty of "a manifest violation of the most sacred rights of mankind." So long as Great Britain shall continue to be "the work-shop of the world"—so long as she shall continue to maintain the monopoly of machinery for the production of iron, and for the conversion of wool into cloth—so long must the farmers of the world continue to raise those commodities of which the earth yields but little, as wheat and cotton, when they might raise potatoes, and turnips, and hay, could they make a market on the land for its products.

The farmer who cannot sell his corn converts it into pork, for the purpose of relieving himself from the payment of this enormous tax of transportation, that he knows *he must pay before any thing can come to himself*. The man who is to consume his product is at a distance so great, that as corn it cannot travel, but as pork it may be carried, and leave something to repay him for his cost of labor. Could he but be induced to recollect that the consuming man would demand of him five times as much food, if brought to his side, there to be employed in converting his wool into cloth, and that he would gladly come, if invited and made sure of employment, he would see that, by pursuing such a course, he would relieve himself from the payment of a tax so enormous that, if even one tenth of the amount were claimed by the government, he would be ripe for rebellion.

The farmer who has a market at hand for his milk, buys his butter and his cheese, because those commodities are brought to market by persons who live at a distance, and must pay the tax of transportation. He knows that, *as milk*, the produce of his dairy will yield him three times as much as it will do in the form of cheese.

The farmer is surrounded with lands covered with timber. He commenced the work of cultivation on the lighter lands that were more easily cleared and drained. Could he have a market for his timber, he could clear and drain his better lands. The cost of transportation is, however, too great; and, as he cannot sell his trees, he is compelled to let them stand, for the labor of clearing would be more than the land would exchange for when cleared. Place the mill or furnace in his neighborhood, and make a demand for houses, and he could sell his timber, and thus clear his land. We see thus that, if we would increase the amount of trade, we must enable the farmer to raise potatoes and turnips

instead of wheat, and also enable him to sell his timber and clear his better land. That he may do this, he must be relieved from the first and heaviest of all taxes, that of the transportation of his commodities to market. Concentration does this for him, and therefore it was that ADAM SMITH was enabled to see how vast was the advantage to the farmer from having the artisan take his place by his side. Dispersion produces the opposite effect. It diminishes the power to produce commodities in which to trade, by compelling the farmer to raise bushels of wheat when he might have tons of potatoes. It diminishes that power by compelling him to continue to cultivate poor soils when he might have rich ones. His timber rots on the ground, when he might sell it, had he a market at hand. *His power to trade is thus diminished by the system which is called free trade.*

The farmer who has a market at hand carries his hay, his oats, or his wheat to market, and brings back a load of manure, by aid of which he improves his land. He who is at a distance from market cannot obtain manure, because of the enormous tax imposed upon him by its transportation, and the consequence is, that his labors become from year to year less productive, as his land becomes more and more exhausted. He begins with twenty bushels to the acre, and, instead of going up to forty, he falls to ten, which is more than is now the average of all the wheat land of the fertile State of Ohio. The next step is to run away himself to seek other land, and thus it is that we diminish instead of increasing the power of association, while increasing the necessity for it.

Every where throughout the world, the productiveness of agriculture increases as the consumer and producer come nearer together; and every where its productiveness diminishes as they separate. It is assuredly time that our farmers and planters should at least begin to see that they it is that need protection; that they it is that need to have the market brought near to them, and thus enable themselves to save not only the transportation of their products, but also to return to the soil the manure yielded by those products; and that the more effectually this policy is carried out, the larger will be the quantity of their crops, and the larger the prices at which each and every portion of those crops will sell. The power of man, whether for the production of food and clothing, the making of roads, or the establishment of schools, grows every where with the increasing productiveness of the land, because men are thereby more and more enabled to work in combination with each other. It diminishes every where with the diminishing productiveness of the land, because men are more and more compelled to fly from each other.

THE APPLICATION OF SALT AS A MANURE.

THERE have been various experiments made with salt as a manure for potatoes. The editor of the "Farmers' Encyclopædia," in 1817, on a gravelly soil, at Great Totham, in Essex, England, made the following trials:

	Bushels.
1. Soil simple, produce per acre	120
2. Soil with 20 bushels of salt in September,	192
3. Soil with stable-manure, 20 loads in the spring of the year,	219
4. Soil with 20 loads of manure and 20 bushels of salt,	234
5. Soil with 40 bushels of salt alone,	192
6. Soil with 40 bushels of salt and 20 loads of manure,	244

The Rev. Edmund Cartwright, of Hollenden House, in Kent, made various important trials of salt as a manure for potatoes. The soil on which the experiments were made consisted of three fourths sand.

"Of ten different manures," said this agriculturist, "salt, a manure hitherto

of an ambiguous character, is (one only excepted) superior to them all. The effect of the mixture of salt and soot is remarkable." The writer of this witnessed the same result on carrots, at the rate of 16 bushels each per acre.

With regard to the destruction of vermin by means of salt, we may safely assert that there is, perhaps, no agricultural use of common salt more undoubted. The effect, too, is direct, and the result immediately apparent. For this purpose, from 5 to 10 bushels per acre are sufficient. The agriculturist need be under no apprehension that the salt will destroy his crop, for 15 or 20 bushels of salt per acre may be applied to young wheat with safety.

Salt has been employed by the gardener for many purposes; most commonly on lawns, at the rate of ten bushels per acre. The following experiments were made by Mr. George Johnson, at Great Totham, and are the more readily given a place here, from the care with which they were made:

The soil was composed of—		Parts.
Stones and gravel,	- - - - -	27
Vegetable fibre,	- - - - -	1.5
Soluble matter,	- - - - -	3
Carbonates of lime and magnesia,	- - - - -	18
Oxide of iron,	- - - - -	4
Animal and vegetable matter	- - - - -	1
Alumina,	- - - - -	4.5
Silica,	- - - - -	40
Loss,	- - - - -	1

 100

<i>Sown with Windsor Beans,</i>		Produce per acre.
Soil treated with 20 bushels of salt per acre, bushels, -	-	217
Soil simple, - - - - -	-	135

<i>With Onions,</i>		Tons. cwt. qrs. lbs.			
Salt, 20 bushels, manure 20 tons per acre, -	-	3	12	3	12
Manure, - - - - -	-	2	10	2	19

<i>With Carrots,</i>					
1. Soil without any manure, - - - - -	13	4	0	0	
2. Soil with 20 tons of manure, - - - - -	22	18	0	26	
3. Soil with 20 bushels of salt, - - - - -	18	2	0	0	
4. Soil with 20 bushels of salt, and 20 tons of manure, - - - - -	23	6	1	18	

<i>With Parsneps,</i>					
1. Soil with 20 tons of manure, and 20 bushels of salt, - - - - -	6	15	0	0	
2. Soil with 20 tons of manure, - - - - -	6	11	1	1	

<i>With Early Potatoes,</i>		Bbls.			
1. Soil simple, - - - - -	-	-	-	-	308
2. Soil with 20 bushels of salt, - - - - -	-	-	-	-	584

<i>With Beets,</i>		Tons. cwt. qrs.			
1. Soil simple, - - - - -	-	4	10	1	
2. Soil with 20 bushels of salt, - - - - -	-	4	8	3	
3. Soil with 20 tons of salt and 20 tons of manure, -	8	0	0		
4. Soil with 20 tons of manure, - - - - -	6	10	0		

In preventing clubbing in the roots of some of the brassica tribe, Mr.

Johnson found salt highly useful; he states, in some observations on this disease, read to the Horticultural Society of London: "Some cauliflowers were planted upon a light silicious soil, which had previously been manured with well-putrefied stable-manure, and over one third of the allotted space was sown salt, at the rate of 20 bushels per acre, immediately before planting in July. The previous crop had been broccoli. Fifty-four plants were set on the two thirds unsalted, and 26 on the one third salted; the result has been, that of the 54 unsalted, 15 have been diseased and unproductive, but of the 26 salted, only 2."

There is little doubt but that salt might be much more extensively employed by florists than at present. A very small quantity of salt added to the water in which flowers are placed, adds considerably to their duration. There are many bulbous-rooted flowers which flourish best in the immediate vicinity of the sea. Mr. Edwin Greville remarked, in 1824, that some common salt applied at the rate of 16 bushels per acre to a portion of a bed of stocks, in his garden at Wyaston, in Derbyshire, made them grow most decidedly stronger and finer, and bloom much more perfectly than those growing in the same bed unsalted. It is a common custom with the importers of exotic plants to dip cuttings in salt water. Before the adoption of this plan, they almost invariably perished in the passage.

Christopher Packe, who in 1688 published in English Glauber's folio volume, dwells at considerable length in his preface upon the mixture of salt and lime: "for the enriching of poor and barren land, it is the cheapest of all mixtures, and is most easy to be done; for any ploughman having but once seen it done, may be presently able to manage it."

Salt and lime was used as a manure by Mr. Mitchell, of Ayr, many years since; and he, not knowing what others had done with this fertilizer before his time, considered himself to be the discoverer. He thus describes his process:

Take 32 bushels of lime, and slack it with sea-water previously boiled to the saturated state. This quantity is sufficient for an acre of ground, and may be either thrown out of the carts with a shovel over the land in the above state, or made into a compost with 40 loads of moss or earth, in which state it will be found to pay fully for the additional labor, and is sufficient for an acre of fallow ground, though ever so reduced before. Its component parts are muriate and sulphate of lime, mineral alkali, in an uncombined state, also muriate and carbonate of soda. All the experiments have done well with it, but especially wheat and beans; and it has not been behind any manure with which it has been compared. There is one instance in which it was tried in comparison with 72 cart-loads of soaper's waste and dung; and although this was an extraordinary dressing, yet that with this salt and lime manure was fully above the average of the field.

Mr. Mitchell calculates that 3000 gallons of sea-water, boiled down to about 600 gallons, will slack 64 bushels of shell lime, (these 3000 gallons of sea-water will contain about 700 lbs. of common salt,) a quantity sufficient for 2 acres. The expense of carrying the water from the sea, the evaporation, &c., he adds, will cost 20s. The 64 bushels of limestone cost him 40s., or 3*l.* for 2 acres.

The use of this mixture of salt and lime was also noticed in the year 1800, by Mr. Hollingshead, of Chorley, in Lancashire, who observes: "Lime prepared for manure should be slacked with salt-springs or salt water: lime so slacked will have a double effect." And in 1816, Mr. James Manley, of Anderton, in Cheshire, when giving his evidence before a committee of the House of Commons on the salt duties, mentioned that in getting marl (which

is a mixture of carbonate of lime, alumina, and silica,) he had found that by mixing it with brine instead of water, the portion of the field on which the brined marl was used, yielded 5 bushels of wheat per acre more than that portion on which the watered marl was employed; and it may be well to remember that the celebrated salt sand of Padstow Harbor is composed of 64 per cent. of carbonate of lime; and that in the experiments of the late Rev. Edmund Cartwright, upon potatoes, of 25 manures, or mixtures of manures, salt and lime were found superior in their product of potatoes to 19 others.

Every farmer has it in his power, even in the most inland situations, to procure this most excellent manure for the use of his farm, by means of a mixture of two parts of lime and one part of common salt, and suffering it to remain incorporated in a shady place, or covered with sods, for two or three months; a plan which I suggested some years since. (*Essay on Salt*, p. 32, 3d ed.)

By this process a gradual decomposition takes place, muriate of lime and soda are formed, the whole mass speedily becoming encrusted with alkali. There is another advantage to be derived from the adoption of this process, besides the formation of soda, viz., that the muriate of lime is one of the most deliquescent or moisture-absorbing substances with which we are acquainted; and in consequence, whenever it exists in a soil, the warmth of the sun has, in summer, much less influence on it than it would otherwise have.

Johnson remarks: "I would especially warn those who try the effect of a mixture of salt and lime, to attend carefully to the directions I have given, and not, as some farmers have done, to use the mixed salt and lime immediately before any decomposition has taken place. After it has been well mixed together in a dry state, it should be allowed to remain two or three months undisturbed, and then applied at the rate of from 35 to 60 bushels per acre, either by sowing it out of a seed-basket, or mixed with earth, and spread in the usual way. It is necessary to give the mixture time, since the decomposition proceeds very slowly, and is not to be hastened by any simple process."

"The mixture of salt with soot produces the most remarkable effects, especially when trenched into ground prepared for carrots. Mr. G. Sinclair found that when the soil, unmanured, produced 23 tons of carrots per acre, the same soil, fertilized with a mixture of only $6\frac{1}{2}$ bushels of salt, and $6\frac{1}{2}$ of soot, yielded 40 tons per acre. Mr. Belfield describes the mixture as equally beneficial for wheat. And Mr. Cartwright found that when the soil, without any addition, yielded per acre 157 bushels of potatoes, dressing the same land with a mixture of 30 bushels of soot and 8 bushels of salt, made it produce per acre 240 bushels."

We trust our readers will try experiments for themselves; as the use of salt as a manure has been so long known, and its effects so fully tested in England, that we have no doubt of its great utility as a fertilizer. It has, in our own experience, proved a most valuable auxiliary to the farmer, and we can name others who have tried it with the most happy results. Will some of our readers give us the result of their own practice in its use as a fertilizer?

MINERAL WEALTH OF THE CAROLINAS.

RECENT discoveries in Moore county, says the *Fayetteville* (N. C.) *Observer*, confirm the confident prediction made by Professor Johnson, over two years ago, that the whole of the country to the Montgomery line would be found to be a bed of coal.

South Carolina abounds in lime and iron ore, and North Carolina abounds in the fuel with which to smelt the ore, and in the labor that would, if so

applied, enable them to export instead of importing iron ; but they waste the labor, and permit the fuel, the ore, and the limestone to remain in the land, useless to all, and then they issue bonds for the purchase of iron ; and thus it is, according to *British* free traders, that the land-owners of the Carolinas are to be made rich. Every day brings with it new discoveries of fuel and of iron ore, and yet every day witnesses a diminution of the power either to produce or to consume iron, because of the existence of a policy that tends to secure to England a monopoly of the supply of the world with cloth and iron.

CHINESE HUSBANDRY AND POLICY.

IN arranging the various classes of the people, [says the *Farmer and Mechanic*,] the Chinese place the literati in the foremost rank, as learning is with them the stepping-stone to honor ; but immediately after the learned, the husbandman takes the precedence of all others, because, being engaged in raising the necessaries of life, he is abundantly more important than the mechanic, who merely changes the form of matter, and the merchant, who originates nothing, and only barter and exchanges commodities for the sake of gain. This honor put upon agricultural employments is evidently the result of design, and shows that the country, being overstocked with inhabitants, needs cultivating to its utmost extent, in order to provide the people with sustenance. The industry and skill of the Chinese, striving to produce as many of the necessaries of life as possible, argues a dense population ever struggling against threatening want, and compelled to exert themselves for their daily bread. In tropical climates, where the ground is fertile and the population scanty, the natives find that by a few months' labor they can produce sufficient food for a whole year's consumption, and are therefore indisposed to exert themselves further ; but in China the inhabitants are incessantly employed, and every individual is obliged to be busy in contributing his quota to the common weal. Every one, in the least acquainted with the manners of the Chinese, knows that they are untiring in their exertions to maintain themselves and families. In the business of agriculture they are particularly active, raising two crops from the ground every year, extending their cultivation in every possible direction, and bringing the most barren and unpromising spots into use, in order that nothing may be lost. Their skill in effecting these objects is not, considering their few advantages, contemptible. They thoroughly understand the importance of varying the crops ; they know perfectly well the seasons and soils adapted for certain productions ; and they are fully sensible of the importance of manuring the ground, in order to maintain its fertility. A stranger is struck with this on first setting his foot on the shores of China. Almost every individual met with in the paths and fields, is provided with a basket and rake ; and every evening the cottager brings home a certain quantity to add to the dung-heap, which is a most important appendage to every dwelling. Having but few sheep and cattle, they are obliged to make the most of the stercoraceous stock of men and swine. This is carefully collected, and actually sold at so much per pound ; while whole strings of city scavengers may be seen cheerily posting into the country every successive morning with their envied acquisitions, little heeding the olfactory nerves of the less interested passengers. Every other substance likely to answer the end is anxiously collected, and carefully disposed so as to provide for future exigences ; such as decayed animal and vegetable matter, the sweepings of streets, the mud of canals, the short, stumpy human hair, shaven from millions of heads every ten days, is

industriously gathered up, and sold for manure throughout the empire. Of the high importance of stercoration in China, we see an illustration in that passage in 2 Kings vi. 25, when there was a great famine in Samaria. In the art of manuring, the Chinese may give a lesson or hint to our agriculturists; while in placing husbandry in the *highest* estimation, and the cultivator of the soil in the *second* rank in the empire, they display a liberality and true enlightenment that throws the American public deplorably in the shade.

MAYNARD'S PRIMER.

FROM our connection with the *American Turf Register*, we flatter ourselves that our hearty endorsement of the following article from the *Springfield* (Mass.) *Republican*, will not be without weight with our readers, a majority of whom seek relaxation from the ordinary occupations of the farm and the plantation, in the exciting and invigorating sports of the field.

The paragraph here quoted refers chiefly to the pistol; but it is the application of Mr. Maynard's ingenious invention to the shot-gun and hunting-rifle, that challenges our admiration. The advantages are many and obvious. The fingering and placing the cap on the nipple—at all times an awkward, and, when the fingers are benumbed with cold, actually a difficult process—is entirely dispensed with, and all danger from accidental discharges and flying caps avoided. Nor does the primer perceptibly increase the bulk of the lock; for though it contains fifty percussion pills, it does not occupy a space larger than a Mexican dollar. Neither is the sportsman liable to those petty annoyances sure to occur at the most critical moment, such as the falling off of a cap, or the stoppage of a tube. But we might fill pages in detailing all the advantages of the new invention. Suffice it to say, we have tried it, and unhesitatingly pronounce it as great an improvement on the percussion-cap, as was the cap on the flint.

Apropos of guns and shooting, we wish to say, that as the "Sporting Olio" of the old *American Farmer* was one of the most popular features of that work, we have it in contemplation to offer in future something similar in the pages of *The Plough, the Loom, and the Anvil*.

MAYNARD'S PRIMER—NEW REVOLVER—THE MASSACHUSETTS ARMS COMPANY.

The famous new primer, the invention of Dr. Maynard, is already known to our readers by description. It forms another of those steps in advance of all the rest of the world, which have peculiarly distinguished the improvements, in this country, in the manufacture of arms and the art of gunnery. It would take but a brief examination of it to see that it must supersede percussion-caps, as caps superseded flints; and what a slight examination makes so apparent, actual and rigid experiment seems to have established. Colonel Craig, the Chief of the Ordnance Bureau, has reported at length to General Scott upon its advantages and superiority, and recommends its early and extensive introduction into the army. General Scott has approved the report, and it is understood that preparations have already been made to equip all the cavalry with arms furnished with this primer. It has, of course, secured this position only by its merits, and after having passed through the most rigid forms of trial to which the Ordnance Department could subject it.

The Massachusetts Arms Company of Chicopee, having purchased the right to manufacture this primer, and apply it to use in the manufacture of arms,

have succeeded in the project of a new revolver, which we cannot believe to be otherwise than very far in advance of any and every other revolver ever made. Colt's revolver is always, and very properly, referred to as the standard by which to judge of improvements here; but we have no hesitation in pronouncing the new arm to be very far its superior. Its advantages are so obvious, that a mere glance at it convinces the examiner that it must supersede its predecessors, as they have superseded the ruder and less ingeniously adapted contrivances of earlier days.

To those who have forgotten the description of the new primer, it will be proper to state that it consists of a line of fulminating pills, placed equidistant upon a strip of water-proof paper. These pills, or deposits of fulminating powder, thus ranged upon a narrow strip of paper, can of course be coiled up in a receptacle within the lock, and by proper apparatus be pushed forward in succession to receive percussion upon the nipple of the chamber or barrel.

The first and prominent advantage which the new revolver has over that so widely known as Colt's, is in the employment of Maynard's primer, and the other apparent advantages are those which grow mainly out of the simplifications which the primer allows. It can be discharged much faster than Colt's. To prove this, it is only necessary to say that it is adapted to a supply of thirty-six primers at once. In Colt's pistol, in order to make thirty-six discharges, the fingers must fix, separately, thirty-six caps; a very slow business, particularly if one is in a hurry. Add to this that the flying of the copper, the "fouling" of the lock, the loosening and dropping off of caps, as well as their corrosion and the moistening of the powder, are all entirely obviated in the new arm, and, so far, its advantage is very apparent. It has other advantages, and among them it appears to us that the doing away of the nipples attached to each chamber of Colt's pistol is an important one. It uses but one nipple, and this is stationary. There is hardly a possibility that more than one chamber can be discharged at once, and its accidental discharge in the pocket would seem to be an absolute impossibility. The method of revolving the cylinder is novel, and has an advantage over those hitherto used.

The construction of the new revolver is the most compact and symmetrical of any we have ever seen, and we certainly do not perceive why it will not crowd all other revolvers out of market when it shall come to be introduced. We understand that the Company are preparing to enter largely into the manufacture of these revolvers, and that they have also engaged in the manufacture of locks for sporting and common guns, they having the exclusive right to Maynard's primer for this purpose. We are glad that improvements of so marked a character as these are in hands so efficient.

HOW THE TARIFF OF 1846 AFFECTS THE MERCHANTS.

Accounts from the South, East, North, and West, all concur in the fact that these several sections are each suffering under a stringent money market, and interior jobbers are not fond of increasing liabilities, while doubts and uncertainty hang over the results of their collections for goods already trusted out.—*New-York Dry Goods Reporter*.

The tariff of 1846 was to increase trade, and thus benefit the merchants. That of 1842 was to diminish trade, and thus injure the merchants. So at least said the advocates of *British* freedom of trade—of that system which looks, and has always looked, to the maintenance of the British monopoly of the machinery for converting the food and the wool of the world into cloth, and the food and the ore of the world into iron. What, however, have been the

results of the two systems? Under the tariff of 1842, the consumption of iron and of coal trebled in quantity, and that of cotton and wool doubled; and there were then no "doubts" or "uncertainty" hanging over "the results of collections," nor was there any necessity for diminishing trade, because men were every where growing rich, and improving their machinery of production, and becoming from year to year better able to pay for all they purchased; while States were not only paying the interest of their debts, but the necessity for creating foreign debt had ceased. Under the tariff of 1846, the consumption of iron, and of cotton and woolen cloth, rapidly diminishes; and with the diminution in the consumption of iron, the power of production diminishes, and "doubt and uncertainty" are every where, rendering it certain that, great as has already been the reduction of trade, it is destined to be still further diminished. Great trade and freedom of trade go together. Trade grew under the tariff of 1842, because under it the power of association grew, and every act of association is an act of trade. Trade diminishes under the tariff of 1846, because it tends to destroy the power of association, without which commerce cannot flourish. The chief trade of the present time is that of issuing bonds to be applied to the purchase of the cloth and the iron that, under the tariff of 1842, we made at home.

IMPROVEMENT OF OUR COMMON STOCK.

THERE is perhaps no one branch of agriculture which more needs improvement, or which would become productive of greater profit to the agriculturist, than that of neat cattle; and it is gratifying to observe some little interest awakening in the minds of farmers generally, to this important branch of their profession. Improvement has been confined too much to the more wealthy; and the man who has been the most liberal in his expenditures to benefit the country in this particular, has not unfrequently met with the ridicule of his neighbors. But happily for such—more particularly for the country—public opinion is undergoing a change, and those who once opposed improvement, are now in some degree availing themselves of its benefits.

That our improved breeds are greatly superior to the common stock of the country, I presume no one will deny. This being conceded, it becomes a matter of no little importance to ascertain in what manner we can the most speedily avail ourselves of the means within our possession for the improvement of our common stock. It is evident that we should seek a cross with some of the improved breeds, the relative merits of either of which I do not propose here to discuss. Every individual, before making choice of any particular breed, should carefully examine the subject, take into consideration his locality, and, more particularly, should *consult his own taste*; for unless fully convinced in his own mind that some particular breed is *the best*, he will probably make but slow advancement. Having made choice of the breed, it is evident that he should then seek to engraft its characteristics and good qualities upon his own stock. And here allow me to say that the farmer not unfrequently makes a great mistake. He procures perhaps a few half-bred heifers, and a male animal of the same grade, and commences breeding. Where is the chance for improvement in this selection? It is true that he may select from year to year his best animals, and thus advance slowly; yet the *grade* remains the same; or perhaps (which is more frequently the case) he procures nothing but a half-bred male animal, and with this intends to make great improvement. The first cross by this animal from our common

cows would be but one fourth; this produces again, in like manner, one eighth, and the next only one sixteenth of the blood of the pure-bred animal, and so on, deteriorating in the same proportion with each successive generation. It is perfectly plain that he has taken a wrong view of the subject, and that his improvement (?) will soon end where he commenced. The most speedy and successful improvement, therefore, can only be obtained by the selection and use of a *thorough-bred* or pure-blooded male animal.

For illustration of this, we will suppose the breed made choice of to be the short-horn or Durham. The produce from the first cross between a thorough-bred animal and our common cows, would be one half Durham; the next cross would give three fourths; the next would be seven eighths, and so on, increasing in the same ratio with each successive generation, until a herd would be reared, nearly equaling the pure-blooded Durhams in beauty and practical utility. Why will not our farmers generally avail themselves of such accessible means for speedy and certain improvement? It would add to their wealth individually, and benefit the country immensely. Instead of the poor, miserable, and almost worthless animals that are now too common in all parts of our country, we should have a breed that would justly become a source of pleasure and pride to their owners, and excite the admiration of all.

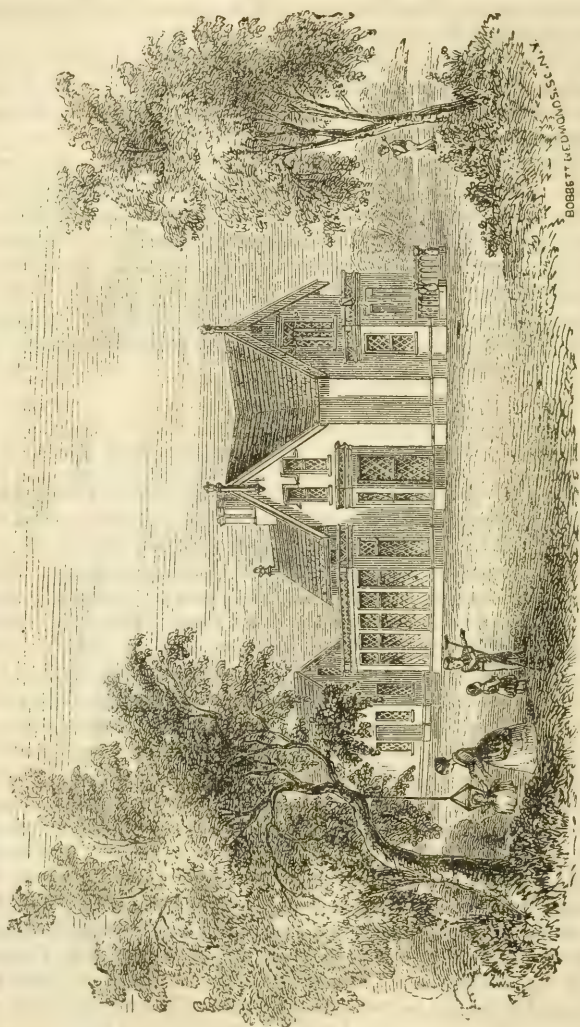
Clockville, N. Y., February, 1852.

S. P. C.

EFFECT OF MAKING A MARKET ON THE LAND.

DURING the year 1850, the eight or ten departments of France devoted to the raising of silkworms and the manufacture of silk, produced a value of 160,000,000 francs. This is an increase of sixty per cent. in fifteen years. The share of the breeder of the worm is by far the largest, as fully three quarters of the above sum, or 120,000,000, was paid in ready money for the cocoons. Besides this large consumption, France imported during the same year 60,000,000 francs worth of silk from various countries, but principally from Spain, Lombardy, Greece, Syria, Turkey, India, and China.

From 1842 to 1846, the average of the crop of cotton was larger than has been that of the years 1849-50 and 1850-51, and almost equal to the average of the crops of the three past years; and our planters have rejoiced in the fact, as tending to prove that the yield of the land could not be increased, and that, therefore, the price must continue high. France rejoices in a large crop of silk, and America rejoices in a small crop of cotton; and the reason of this difference is, that the former combines her food and her silk, and sends them abroad in the compact form of *gros de Naples*, *gros de Soie*, ribbons, &c., &c., and is therefore enabled to maintain a direct trade with all the world; while the people of the Southern States insist upon keeping their food at home and exporting their cotton in its roughest state, and thus depriving themselves of the power of maintaining any trade with the consumers of the world, except through the medium of the looms of Manchester and Lowell, and those of Lyons and St. Etienne. They destroy the home consumption, and then rejoice in short crops; whereas, if they would determine to make a market at home for food and cotton, they would do as they do in France—rejoice in large ones. They deprive themselves of the power to maintain direct trade with the consumers of cotton cloth, and are then forced to exert themselves to form combinations for the purpose of enabling them to obtain direct trade with even the consumers of raw cotton!



COTTAGE DESIGNS—No. III. RESIDENCE OF WILLIAM H. RANLETT, ESQ.

ROBERT H. RANLETT, ESQ.

COTTAGE DESIGNS—No. 3.

IN the construction of a dwelling, one consideration should never be forgotten; and this is, it is to be a *Family home*, and consequently adapted, as far as possible, to the *convenience and accommodation* of a family. To secure this result, the proprietor should always adapt his plan, in regard to its site, healthiness of situation, pleasantness of location, surrounding scenery, &c., &c., to best promote this important end. He should also endeavor to combine the greatest aggregate of comfort, pleasure, and health, with a symmetrical and ornamental structure, pleasant surrounding scenery, &c.; and to do all this for a certain sum of money, and that, perhaps, more limited than he could desire, requires no small degree of practical skill and intelligence. The construction of a dwelling is an operation which thousands perform but once in a lifetime; hence, a mistake or error in the selection of a site, the formation of a plan, or in any other fundamental particular, is a permanent inconvenience upon the occupants. In fact, such an error has often rendered an expensive building comparatively valueless, to the unavailing regret of its owner during the remainder of his life.

Hoping to add to the already increasing interest in improvements in architecture, particularly in our villages and rural districts, we shall continue our series of designs and plans, which will be of a diversified character, and adapted to the various tastes and circumstances of our readers throughout the country.

The annexed engravings exhibit a perspective view and ground plan (the latter on an enlarged scale) of a half ornamented cottage in the English style, recently erected on Staten Island by W. H. Ranlett, Esq., author of "*The Architect*," (an excellent popular work relating to cottage and village architecture,)* in the composition of which the object has been to combine convenience, economy, and elegance, in such a manner that neither may predominate at the expense of the other. The exterior is sufficiently ornamental to be in keeping with the general harmony of the whole, the windows furnished with diagonal sashes, and the peaks of the roof, neatly ornamented, are prominent features of the design.

Figure 1 is a distant perspective view of the cottage and grounds, the front entrance being from the platform or balustrade on the right; the octagon containing the winding staircase, being on the opposite side, is not seen. One of the bay windows and the conservatory, are conspicuous and ornamental appendages to the main structure.

Figure 2 (on the next page) represents the plans and dimensions of the rooms, halls, closets, &c., of the ground floor, all in the clear, with the windows and door-openings all drawn to a scale of eight feet to an inch.

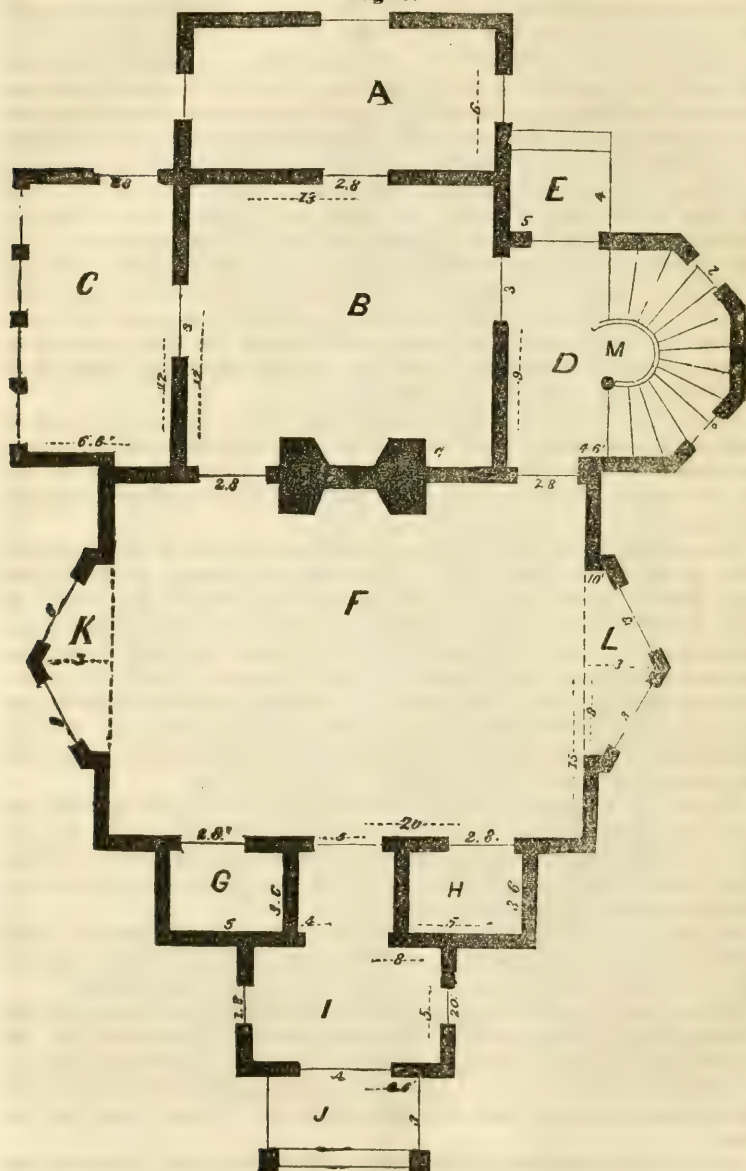
In the plan, A is the ante-room, entering from the rear of the cottage and opening into the dining-room B. The conservatory, C, is shown on the left, and the hall, D, with the stairs, on the right. E shows the entrance platform; F is the drawing-room; G and H, closets; I, the porch or ante-room to the drawing-room, entering from the front platform J. K and L are bay windows.

All the rooms are conveniently arranged, the dining-room, B, communicating with the hall, D, drawing-room, F, and greenhouse, C, while the drawing-

* Published by Messrs. Dewitt & Davenport, Tribune Buildings, New-York.

room communicates with the ante-room in front, and the dining-room and the hall in the rear.

Fig. 2.



The kitchen, with closets, wash-rooms, &c., to suit the taste or convenience of the proprietor, is intended to occupy the basement of the building.

AGRICULTURAL RESOURCES OF CALIFORNIA.

EXTRACT OF A LETTER TO THE EDITORS OF THE PLOUGH, THE LOOM, AND THE ANVIL.

ASIDE from mining inducements, it appears a large class of persons in the Eastern States design ultimately to emigrate to our western coast, because of its agricultural advantages, and its mild, salubrious climate. To such, a two years' experience among the mountains and in the valleys of California may be of interest.

Valley, hill, and mountain may be said to represent the country's surface, the latter of which exists in much the greatest proportion, having poor soil, and producing an abundance of pine timber. The hill land, intermediate between the valley and mountain, and varying from five to twenty miles in width, is usually covered with various species of scattering oaks, having short trunks and large tops, among which the live oak is abundant. The soil is light and porous, of a reddish color, and well adapted to grazing, and probably to the production of small grain. It has little sward, and most of its grasses spring from the seed of the previous season.

Clover (of various kinds) and oats in places grow spontaneously and in abundance. The oats, however, are lighter and inferior to those cultivated farther east.

The valley country between the Coast Range and Sierra Nevada, mostly lies along the San Joaquin and Sacramento and their tributaries, and varies from one to fifty miles in width, having a soil similar to the hills, but richer, and mostly destitute of timber, except along the streams. By irrigation, these plains doubtless would produce most agricultural products abundantly, but not to the extent of the Mississippi valley.

Small grain may be successfully produced without any more moisture than that caused by the ordinary seasons.

The winter months, with November and March, compose the "rainy season," excepting which, we have but few showers.

The climate in this latitude, westward near the coast, admits the growth of the tenderest of plants at all seasons, the heavy dews superseding the need of irrigation, but most of the latter region is supposed to be under valid Spanish grants to individuals.

Stock cannot be as extensively grown as in many of the Western States, but with much less expense.

Swine fatten finely upon the clover, oats, acorns, &c.

The rainy season has continued one week, and at this time the young clover and grass give California the appearance of spring, and our stock are just commencing to thrive upon grass.

The climate of this State appears decidedly healthy, being neither subject to the lung complaints of the changeable Eastern States, nor the bilious diseases common to those of the West.

Diarrhoea, so common to the changes the constitution of the emigrant undergoes, is almost unknown to those acclimated, or to the native Californian.

I have visited the gold range for some three hundred miles, and feel assured that for many years they will prove a source of immense wealth, especially when the price of labor becomes reduced to that of other parts of the world, so as profitably to work the poorer diggings.

If, therefore, gold mining is extensively to be prosecuted for many years

in this region, agricultural interests also must be good, considering the small portion of country that is tillable.

Good agricultural implements are much needed, and command a high price; and ploughs, reapers, and threshers, such as are used upon the Illinois prairies, are the kind we want.

I send you a few grains of Russian barley raised on Bear river, said to have averaged seventy bushels to the acre, and selling for seed at twenty cents per pound.

CHAS. F. INGALS.

Sacramento City, California, Dec. 28, 1851.

REMARKS BY THE EDITORS.

We are under obligations to our obliging correspondent for his attention, and hope to receive further communications from his pen in regard to the present resources, productions, and future prospects of California. The barley referred to in this letter we have received, and it is really a beautiful specimen, although a friend recently returned from that State remarks that he has seen it still heavier and more plump. It is quite different from the barley usually produced here, the grain being larger, more full and smooth, and more nearly resembling the Australian wheat in appearance. If it can be made to produce forty bushels (instead of seventy) to the acre here, it will be a very fine yield. We trust some of our California friends will forward a sufficient quantity for trying the experiment by some of our farmers in this section, as we believe it would abundantly repay them for the trouble of introducing it into the Eastern States. Will some one be so kind as to do it?

THE POLICY OF SOUTH CAROLINA AND ITS EFFECTS.

"THE fact is, that South Carolina has been directing all her energies and talent to federal politics so long, and neglecting the improvement and best interests of the State to such an extent, that hundreds and thousands of her citizens are leaving, and forced to leave. This is seen and felt; the disease is obvious, and political quackery has suggested a remedy, which is still further to paralyze the energies of the State by entailing poverty on a certain class of her citizens, and then inducing that class to remain within her limits, to the exclusion of a more industrious, energetic, thrifty, property-holding, and crediting class.

"If South Carolina wishes to retain all of her citizens, and cut off that tide of emigration which has been depopulating her for the last thirty years, she ought to commence developing her resources, creating a demand for labor, extending her railroads and plank-roads, building up manufactories, erecting public buildings—a new State-house like that of Tennessee or North Carolina, and a penitentiary where criminals may be made to work like honest men; and, above all, fostering and cherishing, in every prudent way, her schools, academies, and colleges. Instead of sending abroad for her iron, and granite, and marble, let her procure these things at home. Let her stop appropriating her money in the purchase of guns, munitions of war, and for military purposes. She has sent enough of her treasure to the North. Let her encourage the direct importation and exportation of our products and merchandise. And last, though not least, let us have done with our political excitements, and be at peace, paying our debts like honest men, and living together as friends, all anxious for the honor, glory, and prosperity of our State."—*Greenville [S. C.] Patriot.*

For the last half century, South Carolina has dictated the commercial policy of the Union, and having been determined not to permit the plough and the loom to come together within her own borders, she has been unwilling to permit them to do so elsewhere in the Union. The celebrated "forty bale theory" was the invention of one of her citizens, determined to prove that the South not only paid all the expenses of the Union, but also supported the people of the Middle and Eastern States. The State needs

now to develop her internal resources, but, to enable her so to do, she must make a market for labor that is now wasted, and must make a market on the land for its products, and save the manure that is now wasted. That done, she may have "direct intercourse" with the world; but until it shall be done, she will be compelled to remain dependent upon Northern merchants and Northern ships. Direct trade with the world she can never have until she shall determine to protect her citizens in their efforts to bring the loom and the anvil to take their places by the side of the plough and the harrow.

RAISING PORK IN VERMONT.

A WRITER in the *Green Mountain Farmer*, in answer to some inquiries proposed by the editor of that paper, in relation to six hogs slaughtered by him last December, states their weight to be as follows:—

"Heaviest, 628 lbs.; the remaining five as follows:—572, 554, 472, 470, 468; aggregate weight, 3,164 lbs. The five heaviest I sold to J. M. Chadwick, of Newbury, for seven cents per pound. They weighed 2,696 lbs., at 7 cents, \$188.72, delivered at Fairlee Depôt, one mile from my house.

"The above hogs were twenty months old when slaughtered, and were of a cross between the Berkshire and native breeds. They were pigs selected from three litters of my own raising. The sows which brought the pigs were about one year old at the time, and were judged by the litters to weigh 225 lbs. each; they were neither fat nor lean at the time, but in fair merchantable order, which, I think, is the proper condition to bring strong, healthy pigs, with least danger from accident.

"With regard to the expense of raising and fattening the above hogs, I cannot give correct or particular information, as they were managed in my usual way with store hogs, and in no particular manner for experiment. I think, however, it has not been a losing business, taking all things into account. They were fed regularly three times a day, and kept in a thriving condition. Three of them were sows, and were the lightest, having been kept much poorer for the purpose of breeding. Only two of the sows had pigs, and raised ten each, in April, 1851, and were kept mostly on slops from the kitchen, and meal through the winter previous."

The value of the manure he estimates at fifty dollars, from which he deducts five dollars for the expense of carting dirt and muck to the yard. This is very important for absorbing the liquid manure, which is of nearly equal value with the solid. The item of manure is quite an important one in fattening pork. The writer further remarks:—

"You ask my opinion as to the manner of raising pork as a source of profit to the farmer. I think the raising of pork, at the present prices of pork and grain, independent of the slops from the kitchen and dairy, would be a losing business for the farmer; but I think it for the interest of every farmer to keep a sufficient number for that purpose. I think no more shoats or hogs should be kept than can be kept in a thriving condition. I am perfectly satisfied that my heaviest hogs have been the most profitable.

"My opinion as to the best and cheapest food for hogs will be of little importance, perhaps. I think, however, that two parts of corn, one of rye, and one of oats, ground and made into pudding, would be the most economical food for hogs a great share of the time.

"In answering your question, whether it is better, on the score of real

profit, to keep hogs close, or to let them run in summer in large enclosures, to feed on grass, I will say that I have no doubts upon the question. I think it best to keep them in a pen and small yard the year round."

RATS DESERT A SINKING SHIP.

IRISH EMIGRATION TO SPAIN.—A deputation of London merchants, interested in the trade with Spain, and of certain members of the projected Peninsular Colonization Company, waited on Mr. Labouchere, on the 21st ult., for the purpose of submitting for his consideration the grounds upon which they requested a charter of incorporation. Mr. Labouchere, after having given the statements made to him the most courteous attention, said, a difficulty, which appeared to him almost insuperable, arose on a point of constitutional, or rather international law, as connected with the grant of a charter incorporating a company having for its object the colonization of any portion of a foreign territory. But though on this head he entertained a very strong opinion, he was not adverse to giving a subject of such interest to Ireland the best consideration in his power. The deputation was accompanied by Mr. Fitzstephen French, M.P., the only representative from Ireland who happened to be now in London.

The most valuable and expensive of machines is man; and his numbers always increase as the land is enriched, and the land-owner is made rich. That they may so increase, it is indispensable that the loom and the anvil take their places by the side of the plough and the harrow. When they do not do so, population diminishes, and the land-owner is impoverished. For centuries, England has spared no effort to destroy the manufactures of Ireland; but it was not until the Union, in 1801, by which the people of the latter were deprived of all protection, that her efforts were completely successful, as will be seen by the following extract from an excellent work that has within a short period passed through no less than eight editions in England:—

Before the Union, Irish protecting duties existed on many English manufactures. Among others, there was a duty on English woollens; a duty on English calicoes and muslins, so high as to be nearly prohibitory; a duty on English silk. There were duties on English cotton yarn, cotton twist, and cotton manufactured goods.

The Act of Union continued the duties on woollens and several other articles for twenty years. It continued the high duties on calicoes and muslins till 1808. They were then to be gradually reduced till they should fall to 10 per cent. in 1816, and to nothing in 1821. The duties on cotton yarn and cotton twist were continued till 1808, and were then to be gradually reduced to nothing in 1816. The linen trade was encouraged by a parliamentary grant, withdrawn in 1826.

Now see the effects, first, of protection, and next, of its withdrawal, or rather a specimen of the effects:

It has been stated by Dublin tradesmen, acquainted with the facts, that in 1800, they had 91 master woolen manufacturers, employing 4,918 hands. In 1840, the master manufacturers were 12; the hands, 602.

Master woolcombers, in 1800, were 30; the hands, 230. In 1834, masters, 5; hands, 66.

Carpet manufacturers. In 1800, masters, 13; hands, 720. In 1841, masters, 1.

Blanket manufacturers in Kilkenny. In 1800, masters, 56; hands, 3,000. In 1822, masters, 42; hands, 925.

Broad silk loom weavers in Dublin. In 1800, at work, 2,500; in 1840, 250.

Calico looms in Balbriggan. In 1799, in full work, 2,000; in 1841, 226.

Flannel looms in the county of Wicklow. In 1800, 1,000; in 1841, not one.

In the city of Cork—

	1800.	1834.
Braid weavers, ...	1000	40
Worsted weavers, ...	2000	90
Hosiers, ...	300	28
Wool-combers, ...	700	110
Cotton weavers, ...	2000	210
Linen check weavers, ...	600	none.

Cotton spinners, bleachers, calico printers, thousands employed—utterly extinct.

The linen trade, protected and fostered till 1826, was not in those days confined to the

North of Ireland. In Clonakitty, in the county of Cork, £1200 a week was expended on the purchase of coarse linen webs, so late as 1825. In Mayo, £111,000 were expended in purchasing the same species of web. In 1825, the sum of two millions and a half sterling were expended in Ireland, in the purchase of coarse unbleached home-made webs.

I am obliged for these specimens of the ruin of Irish industry to Mr. Butt, Q. C. at the Irish bar, who informs me that they could be very much extended.

Before the Union, there were under protection Irish woolen manufactures, Irish carpet manufactures, Irish blanket manufactures, Irish silk manufactures, Irish calico manufactures, Irish flannel manufactures, and Irish stocking manufactures. These manufactures are now smothered and extinct.

But what ought they to have been, with increased population and power of consumption, with the application of steam, with improved mechanical and chemical agencies? What would and must they have been, but for the blight of English competition, withering at once both the power of producing and the means of purchasing? What might they be made EVEN NOW, should England, instead of blindly chasing the phantom of cheapness, no matter of what sort, at once and seriously address herself to developing the unexplored but prodigious productive power of Ireland?—*Sophisms of Free Trade*.

Having first destroyed the manufactures of that country, England has lately done the same by her agriculture; and the consequences are seen in the fact, that the whole people of Ireland now flee from the land, and the land-owners are ruined.

THOROUGH OR HIGH FARMING.

BY PROF. J. J. MAPES, IN THE JOURNAL OF AGRICULTURE.

THIS term has been generally adopted by the best European writers to express such a system of farming as would embrace the use of capital liberally, and at a maximum profit, in contradistinction to low farming, or the procuring of minimum crops, with no investments beyond the purchase of land and cheap workings.

Those who pursue high farming argue that it is both safe and profitable, and that they use their capital liberally to put the land in the best possible condition by under-draining, sub-soil ploughing, convenient arrangement of cisterns, pumps, manure-houses, &c., &c., so as to have light expenses by labor-saving arrangements, at the cost, perhaps, of heavier original outlays.

The high farmer has analysis of his soils, and uses upon them all the manure they are capable of converting into plants; or, in other words, all that can be used with profit, instead of only so much as will only produce a crop. For such crops as are found to pay a profit for the labor, the soil is ploughed two, three, or more times before planting; and where a thorough admixture of the manure through the soil is found to be more advantageous than simply to plough or harrow it in, a large cultivator or stirrer is liberally used for this purpose. For crops which are advanced materially by continued irrigation, even steam-engines are kept in motion to insure the necessary supply.

Cattle on such farms are never pastured, but always fed in buildings supplied with every convenience to save manual labor. The supply of water is always at hand, and readily led by gutters to the front of the animals. The arrangements for warming and ventilating are such as to insure a steady and healthy temperature and supply of atmosphere. The manures are rapidly removed as voided, and composted with as much inert vegetable matter as can be converted by its fermentation into useful amendments. The fluid excretæ is led by gutters to masses of matter, which receive it and retain the volatile portions from evaporation.

If the soil is short of potash, soda, or any other constituents of the required crops, these are added; not directly to the soil, but to the compost-heap, so as to advantage by their decomposing or chemical effects before going to the

roots of plants. Manures are never left immersed in water, parting with gases without undergoing proper decomposition; but the drainage of manure-heaps is daily returned to them, to supply the necessary amount of moisture to insure decomposition without burning or *fire-fanging*.

If ammonia is lost by steaming or overheating of manures, the drainage-cistern of the heap is immediately supplied with dilute sulphuric acid, or some soluble sulphate required by the compost, which changes the volatile carbonate of ammonia to the fixed sulphate of ammonia, and thus all the excretæ of animals is saved in its best and most efficient form.

Some old-style farmer may say, "This is all very well; but where is the money to come from, and when can you get it back?" We answer, as to the latter inquiry, that many men in England and elsewhere, as tenant farmers, have made large fortunes by high farming, while but few have done so by any other style of culture. Now, while free trade is paralyzing the efforts of the farmer, those who pursue high farming alone are able to succeed. We do not assert that all who spend much money succeed as a consequence of such expenditure; but those who use their capital freely and judiciously do succeed, and find it more to their interest than to invest on bond and mortgage at the ordinary rates of interest. Hundreds of tenant farmers in England are borrowers of capital on interest, extending the amount of their operations as their increased capital may permit.

How many farmers do we know in this country, who have heired fortunes, or become rich by the rise of property, and whose farms are of less value than their more industrious neighbors', from the want of capital properly applied to them! They loan out their surplus incomes at six per cent. per annum, when a part at least could be used on their own farms at twelve per cent. with profit.

Let no man, however, attempt high farming, who thinks a fact becomes a falsehood by having been printed. He must have brains enough not to rail out indiscriminately at *book farmers*. He must even read books, until he knows how to answer the following questions, at least, and as many others appertaining to his calling as these may suggest:—

Do plants receive the whole of their nourishment from the soil, or part from the atmosphere? and what from each?

Do those received from the atmosphere enter the plants above or below the surface of the soil? and, if in part below, what conditions of the soil are necessary for their reception?

By what means are these conditions of the soil to be attained?

How does moisture affect the vegetable economy?

To what depth will the roots of plants enter the soil if properly prepared?

To what depth do the solutions of manures penetrate the soil? and if not to an indefinite depth, why?

In what manner, and from what causes, do plants receive the constituents of manures below the surface of the soil?

Of those solutions of manures which filter downwards, what portions are lost to plants? or of those which rise as gases, what portions escape into the atmosphere without being absorbed by plants? and why? What modes may be adopted to arrest them until plants can make use of them?

Let those who would censure high farming find the farmer who can answer these questions, and they will find a successful votary of our art, and one, too, who can enjoy nature as his God intended he should. Such a farmer can find delight in observing nature's laws, and "*look through nature up to nature's God.*"

All these questions may be answered; and our readers will find them

answered if they will read the *Journal* with the same care they would examine a mortgage when buying it. Some may say farmers have not time to become chemists and natural philosophers; nor is it necessary that they should; but they should, for their own happiness and profit, know so much of the sciences as to be able to read them understandingly and to apply them readily.

It is not necessary that a farmer should be capable of analyzing his own soil, but only to understand the analysis when made. Because a farmer may occasionally have a lawsuit, he need not necessarily study law, and become a lawyer; and if an analysis will cost but five dollars, he is a lucky fellow if he does not pay more money to lawyers than to chemists.

But some say, they are too old even to study so much as to understand an analysis, or to learn how to apply manures in accordance with it. If so, employ a consulting agriculturist to inform you, and pay him less for enabling you to double your crops than you now lose by wasting manures from bad management; and if you cannot find a more competent one, apply to us.

HOW PROTECTION INCREASES AND BRITISH FREE TRADE DECREASES THE CONSUMPTION OF IRON.

THE history of the iron manufacture for the last few years furnishes an instructive lesson to the statesmen of this country. This article enters into such general use in every occupation of life in all countries advanced beyond the first step of civilization, that it may well take rank among the necessities of life among ourselves.

The importations of bar and pig iron for the year ending 30th September, 1842, were	100,055 tons.
The estimated production in the United States for that period, was	230,000 "
Making an aggregate consumption of	330,055 "
Or 40 $\frac{1}{2}$ pounds per head.	
In 1846, the importations were	69,625 "
And the production estimated at	765,000 "
Consumption,	834,625 "
Or 92 pounds per head.	
In 1848, the importations were	153,377 "
And the production,	800,000 "
Consumption,	953,377 "
Or 99 $\frac{1}{2}$ pounds per head.	
In 1849, the importations were	289,637 "
The production,	650,000 "
Consumption,	939,637 "
Or 95 $\frac{1}{2}$ pounds per head.	
In 1850, the importations were	337,532 "
The production,	564,000 "
Consumption,	901,532 "
Or 86 $\frac{1}{2}$ pounds per head.	
In 1851, the importations were	341,750 "
The production,	413,000 "
Consumption,	754,750 "
Or 69 $\frac{1}{2}$ pounds per head.	

Thus we perceive that the actual consumption of iron, which, under the

high duties and prices, was steadily augmenting in quantity, is, under the present reduced rates, both in duties and prices, gradually falling off, notwithstanding the increase of population and the great extension of our farming interests.

CULTIVATION OF FRUIT AND FERTILITY OF SOILS.

MESSRS. EDITORS:—In perusing your valuable journal, I noticed an article on the management of apple orchards, in which the writer says, many people complain about the unproductiveness of their orchards, and their unsuccessfulness in propagating and cultivating fruit trees. He says, "there must be some cause for this failure in raising and producing fruits." I believe it to be highly beneficial for farmers, in different sections of the country, to discuss, through the columns of agricultural journals, the best modes of culture, not only of fruit trees, but of different kinds of crops, giving the quality of the soil, the kind of manure applied, and the exact product of the same. I am willing to admit there must be some cause for this failure in raising and producing fruits, and, in a great many instances, it may be beyond our control.

On my farm, I have one hundred apple trees, of the same kind of fruit; five of those trees were transplanted fifty years ago. They have been great bearers, producing uncommonly fine fruit, until within five years past, since which they have totally failed. The product of those trees was so great, that I have sold the fruit, on an average, for \$150 a year. It induced me to transplant one hundred trees of the same kind of fruit, adjoining the old trees, about fifteen years ago. They too have proved a failure. Although the trees blossom and set very full with apples every year, they fail to produce fair fruit. When the apples get about the size of a hickory-nut, they become very rusty, crack open, and commence falling off, and continue to do so until all are gone. I do not believe this failure is the want of proper management, nor do I believe in the management of the writer above referred to; although I believe, under such treatment, trees may sometimes bear well; but, one thing is certain, the fruit will not be so large nor so fair. All kinds of fruit trees need manure and culture as much as corn and potatoes, to bring the fruit to perfection. Orchards ought to be thoroughly ploughed, but not too deep, especially among old trees, as it injures the roots. The writer says the idea of ploughing orchards, when the trees have become large, is not a consistent one. I would ask him, if trees, at an advanced age, do not require as much, if not more, cultivation than young trees? They certainly absorb more substance and more moisture; and no person will deny that the soil, thoroughly worked, will not retain the moisture longer than when not worked, which is very important on a light soil in a dry season. I have known very old orchards, in my own neighborhood, that have ceased to bear, because they had not been cultivated in ten years, and, by passing into other hands, they have been renovated by constant cultivation and manuring.

As regards my own experience in the cultivation of fruit trees, I have, on that part of my orchard above referred to, taken great pains in applying manure of different kinds, having used marl, lime, ashes, &c., and ploughed in green crops, to supply the soil with vegetable matter. I have also removed the old bark, by the use of a scraper; but all to no purpose, as far as bearing is concerned. My trees, however, are in a very thrifty condition, but I do not expect to get a crop of apples until I understand better the nature of the soil, and what ingredients it requires to bring the fruit to perfection. Now, whatever earthy ingredients are found in the wood or bark of trees, are drawn

from the soil; and if the soil is deficient in any one of these, we cannot expect our fruit trees to bear well, or bring their fruit to perfection. In ascertaining what the deficiency is in soils, for the productiveness of an orchard, it is highly necessary for farmers to understand chemistry, so far as to enable them to analyze their soils. I believe a man may be a farmer all his lifetime, and, unless he understands the nature of his soil, and what it is composed of, he may apply different kinds of manure, at a great expense, and not add to its productiveness or fertility. He may, for instance, apply lime, and for the growth of certain kinds of crops there may be lime enough already in the soil, and the application of more may injure the crop. Also, with regard to marl, I have known farmers in my vicinity to apply marl year after year, believing they could, with that alone, bring their soil under a high state of cultivation, not sowing any grass seed, or supplying any green crops to furnish the soil with vegetable matter for the marl or lime to act upon; consequently, it becomes so full of that ingredient, that it burns up and destroys the crops.

J. L. CONOVER.

Middletown, New-Jersey.

WHO PAYS THE DUTY?

THE annexed account of an interview between the writer and Mr. Silas Wright, which we take from a contemporary journal, will have interest for those who still doubt if the English producer of cotton goods is not in the same condition as the American producer of food and cotton—both being compelled to overcome the obstacles which stand between them and their market, whether in the form of freight, insurance, or duty. If they are, then is it the foreign producer and not the domestic consumer that pays the duty; and then must the producer of food and cotton gain on all hands by every measure tending to make a market on the land for the products of the land.

“A Committee from New-York, of which I was a member, called on the late Hon. Silas Wright, of the Senate, and endeavored to engage him in a conversation on the tariff. He objected mildly, for at that time his party had not fairly declared on which side of that question they would array themselves.

“Mr. Wright said that his great objection to a protective tariff was, that ‘the consumer paid a direct tax to sustain the manufacturer.’ We then asked him if he did not think that the competition arising from protection soon caused the protected article to be furnished at a reduced price. He said he had heard that argument before, but was not ready to admit its truth; that such had not, in his opinion, been the result with articles formerly protected.

“‘Well, Mr. Wright, if it could be clearly shown that every article which has ever received five years’ consecutive protection by tariff, has been furnished at the end of that time at a less cost to the consumer than the foreign cost at the time the protective duty was imposed, would you then agree to vote for a protective tariff?’ ‘Yes, certainly,’ said Mr. Wright; ‘and I will undertake to name many articles to which your rule will not apply.’ ‘Well, sir,’ said our committee-man, ‘we hold you to your promise either to find the exception or to vote for the tariff.’

“‘Are you really serious, sir,’ said Mr. W., ‘in supposing that I cannot find the exception?’ ‘Certainly, sir; we defy you from the many hundred articles which have been protected from time to time to find one which is not within our rule. The very moment capitalists find that a manufacture is protected, they immediately invest their capital; and others doing the same, causes competition and consequent improvement in machinery, and thus the price is reduced, and further protection, at the same foreign cost, rendered unnecessary.’ ‘Why,’ says Mr. W., ‘look at the article of *nails*; their cost is in the material; why have they not been reduced by your rule?’ ‘So they have; and if you will recollect, a few years ago nails now worth 4 cents per pound were then sold at 12½ cents; and were it not for the use of American machinery, invented in consequence of the competition arising out of protection, the same nails could not now be imported from

England for less than 10½ cents per pound.' After proposing a few other articles of manufacture with like success, Mr. Wright said, 'Well, gentlemen, you have my promise, and I shall fulfil it; but you will find it will be by pointing out the exceptions to your rule, and not by voting for the tariff.' I need not tell you that Mr. Wright was diligent in trying to find the exceptions, and with full time he distinctly failed to do so, and therefore redeemed his pledge by voting for the tariff of 1842, and by so doing made it a law. If the opponents of a judicious tariff have any statesman more capable than Mr. Wright of finding the exception to the rule, let them produce him; but until they do so, they should cease to assert that 'the consumer pays the duty,' &c.

"MORE ANON."

CULTURE OF INDIAN CORN.

MESSRS. EDITORS:—Indian corn is a great staple crop throughout this country generally, and much use is made of it, both as food for man and feed for many of our domestic animals, while too much of it is wasted in the distillery. If we were wholly deprived of this crop, we should feel the want of it more than of any other which is cultivated, especially within the New-England States. This being the case, we ought to be sure that we apply the best mode of culture. In this particular, we here differ much from the Middle States, where they do most of the labor in its culture with ploughs and harrows, with horses attached. We here do much with hoes, in digging up the soil around the hills; there, it is left more level and loose in its place, for the corn-roots to feed, and longer retains its moisture. In this last mode of management, there is not half the labor as in the former, and it is, I judge, much more favorable for a crop. But what has been said is not the greatest object in view. In Judge Buel's day, there were great controversies in regard to the management of corn when it was about maturing. It became quite a question whether, when corn was "turning," or "glazing," it should be cut and shocked, to procure the best and heaviest crop. It was generally conceded that the corn would be heavier by cutting it up in that early stage of turning, when full, before evaporating and wasting. I was then entirely against cutting it up, believing that the moment it was cut off it ceased to be fed, and consequently shrunk. Another controversy took place in regard to corn-stalks remaining on until fully matured, the tops feeding the ear to a great extent, and thus causing much saving. At that time it was generally believed that with the stalks on, the best and heaviest corn was produced.

From that day to the present, what has been the improvement? Are those things fully tested to the general satisfaction of all of us who cultivate corn? And ought we not to be able to answer them from actual experiment?

On this subject, I can say I have satisfied myself, by experiment and observation, that there are great losses sustained both from cutting up and shocking corn in the early stage of harvesting, or suffering it to remain untopped to its full maturity. The effects of either mode are similar. In cutting and shocking, the moment the stalk is cut off, the ear is no longer fed, but a constant evaporation takes place, to the great shrinking of the whole stock, cob and kernel. So it is with that with the top remaining on while maturing. Corn loses its vigor in proportion to its decay, till finally there is no circulation of sap. In passing through this stage of action, the root fails to supply the top when remaining on, and forces to maturity the whole stock, particularly the stem of the ear, causing sudden weakness and the falling down of the stalk, and hanging and shrinking of the kernel. When corn is topped, as usual, as proved by the experiment, side and side, the ears of the topped remain with stiff stem, and it is later, and much fuller kernel. The difference in the weight, from the two different modes of culture, is as follows: Cut with tops on, or

shocked, per bushel, 57 lbs.; topped in usual season, both dry, 65 lbs.; difference, 8 lbs.; loss in measure, in shrinking, one eighth, or half a peck. This is a great difference, from the different modes of husbandry. It is surprising that the farmer blunders along through tradition, without notice or experiment. Here we see, from a different mode of culture, a loss of fourteen per cent.!

I hope I shall not exhaust the patience of my readers, should I seem rather prosy in stating some facts on the culture of this most valuable product; for it surely behooves us to bring forward every item of knowledge that will contribute to enhance the crop.

In my experience, contrary to all practice, or even theory, I blundered into a practicable *reversed* method to any I have yet named, which, strictly followed, will give a great increase of this crop. It is this: *be sure that you carefully top your stalks when your corn is in milk*. Don't be startled, reader, but try the experiment. A few years since, while in my corn-field, it occurred to me to top a few hills, to see the effects of topping corn in milk, not as full as usual for boiling; and, contrary to my expectations, on afterwards examining the ears, I found them all unusually full, even to the bursting of the husks. They were of unusual length, and the kernels full and plump. It is my belief that this theory, put in practise extensively, would result in great gain in a crop of corn, possibly twenty-five per cent. I hope to hear of this experiment being well tested. There is nothing which I have neglected in my different modes of culture, that I so much regret, as my not following out this experiment, and putting it in practice. I think there should be two cuttings of the stalks, to be sure of cutting when the corn is of the right age. While writing, a friend who has called on me coincides in my views, from his own observation, his corn having been broken into by his cattle, and the stalks eaten and broken off when in silk. The ears remaining were found on maturity with stiff stems and full kernels. It is his full belief that, by this mode of culture, a great advantage may be obtained.

I now intend to notice more particularly the difference in management necessary to produce a crop of corn, and the results therefrom.

People differ very much in the distance of planting their corn; some plant three feet and some four apart. This difference depends somewhat on the ground—whether high or low, rich or poor. If high and light, I would plant a large kind of seed, the hills at least four feet apart. On such ground it takes deep root, and withstands the drought far better than small seed, which soon yields to hot suns and droughts, for want of more depth of root. Ground in good tilth, tolerably moist, is best adapted to small seed; but you cannot expect so great a crop as from that of large growth. The greatest difference in a crop of corn, however, results from good or bad hoeing. It is often said half depends upon the *culture* of corn, but I say *all*. Prepare a piece of land well for corn, and plant it with the greatest care, and do not hoe or dress it at all, and you get no corn; but if you slightly hoe it, or, as it is called, half-hoe it, you get half a crop; if you hoe *well*, you get a full crop. The gentleman spoken of in the case of topping corn when in milk—whose experiment, in my mind, is reduced to a practicable certainty—related to me a story. A neighbor of his hires a piece of land, (five acres,) and is in the practice of tilling it yearly, and well manuring it. Last season, he planted it with corn, and called on him to cultivate it. Being neglected until late in the season, the ground in high tilth, the weeds had got high; and of course, the corn being slim and small, he could make but poor work with the cultivator. It was suggested that it had better not be hoed, as he would not get pay for

his labor. For the looks of it, however, he determined to hoe it, and the result was that he had no corn.

I next propose to consider the loss or difference in the different modes of dropping seed-corn. Every observing farmer has noticed that single kernels of corn, when dropped into ground in high tilth, in the right season, will produce two or more shoots. Those shoots, suffered to grow, are sure to outgrow the original stalk, and often bear the best ear; but in case of a full hill, to the number of five, and scattered eight inches across the hills, they being three feet apart, centre to centre, leaves in fact the corn but two feet four inches between hills. Now, on quick, highly manured land, the corn will be thick, every kernel producing three stalks each. In its early stage it is very handsome, but it soon feels a pinch from exhaustion of soil, want of rain, and circulation of air; and if a sharp drought occurs, the crop is totally lost. I have planted a few rows in this manner, and a few the same distance, centre to centre, placing the seed in a space of an inch or less. In their early stage, the scattered seed far excelled the other; but when spindled out, the closely planted corn was much the tallest, heaviest, and largest eared. This close seeding prevents the shoots from growing to any size, leaving space for sun and air, rendering it much easier to hoe the ground, and is much less exhaustive of its natural strength and moisture. In this experiment I found, in favor of the close-planted seed, seventy-five per cent., since which I endeavor to have my seed-corn dropped as close together as possible.

Of corn-mixing, there are erroneous opinions existing. A general opinion is, that it takes its relative qualities from the fecunda that falls from the spindle and blows from field to field; but it never appeared to me that this small and dry substance, settling on or blowing against a corn-stalk, could have the effect of changing or mixing with any varieties. I have thought it more rational to attribute it to the egress and ingress of the odorous perfumes of the atmosphere which escape from them, and, like all vegetables, feed therefrom in part for their growth, and they cannot do otherwise than partake of the nature of each other. I planted a few rows of corn in my garden last season, some early and some later, side and side. There were two rows only of the early, and three of the late. The early spindled out quite early. A gentleman calling, noticing the corn, remarked: "Ah, your corn is spindled out," (sitting in his carriage six or eight rods off) "Yes," said I; "how many rows do you see spindled?" "Three rows." "How much difference in the two kinds should you judge there was between those spindled and the two rows that are not?" "About two weeks." "Do you see any difference in the three spindled rows?" "No, I do not," was the reply of this very observing, excellent farmer. I explained to him that one of the early rows—that next to the late—was of the late kind, but, being planted by the side of the early, had partaken so much of its nature as to cause this difference, reducing it almost entirely in every particular to that of the two early rows. This was new to the gentleman, as well as to myself. We had both heretofore concurred in the belief that, in the mixing and changing of corn, it would never show its effects, particularly the first of the year. These results ought to be sufficient to induce any one to abandon the mistaken notion of the change from the effect of the farina blowing into fields at great distances, as this change was effected in its early stage of growth, before its spindling to give off this bloom. I can conceive of no other cause than that herein named to produce the effect.

There is one other mode of management for a crop of corn, which I had rather forgotten in its turn. It often happens at the closing of our planting, that we have small parcels of manure left that is coarse, and which is mostly

made after the usual spring work is done; here, it will be perhaps the middle of June. Those piles, with scrapings of any thing like manure that would only lie in the way, should be collected, and a piece of ground selected that has been considered too low and wet to plant for a crop, consequently the grass will be very much "bound out." At this season, there will be found with the old rowen and fine grasses considerable of "stuff." With those collections of manure you may dress from an eighth to half an acre. Plough no more than you can dress well; spread the manure on the sward before ploughing. Your plough must be sharp, and guaged with a truck or a foot. I prefer a foot, as it clears away rubbish, while a truck jumbles over and raises the plough. You are to plough this ground; that is, sink your plough as near three inches as possible, and make good work. This ground lies up lightly, and is soon warmed through by the sun. Your corn will never suffer from drought nor wet. In planting, scrape small, flat excavations, but do not go through the sward. A very small quantity of old manure in the hills will give it a good start. In this mode of culture, I get much my largest crop of corn—say eighty to one hundred bushels per acre—and the ground will be in a favorable condition to harrow down the ensuing spring to grain and grass, or grass alone. I am thus particular, as it is new in practice, and I am the only one who has followed it, and that for two seasons only, but with the greatest success. A little deviation—as deeper ploughing or digging through the sward—would destroy the system. In planting, I think four kernels to the hill is best, to insure the largest crop generally. My opinion is, three stalks, to stand, is better than more. To be sure of three stalks, we drop four kernels, one for loss or failure.

The next thing in course is to know how to hoe the corn. On this very shallow-ploughed ground, the use of either the plough or the cultivator would tear this thin and light turf entirely asunder, and unfit it for any crop. The plough for this work—turning the sward—is a light, old-fashioned kind, with a foot in the beam; and a light horse-harrow, (one with wooden teeth being preferable,) harrowing lengthwise of the furrow, may be used with care, filling up the cracks of the furrows, &c., and but little else is needful: it will want a little "scuffing" with the hoe. The corn, by this management, and at this season of the year, will grow luxuriantly, and overpower the few weeds that may spring up after the hoe. I can say from experience that, by this mode of culture, corn will attain a much larger growth and mature sooner, than by any other mode within my knowledge.

Portsmouth, N. H.

ABEDNEGO ROBINSON.

MINERAL RESOURCES OF THE SOUTH.

THE *Wilmington (N. C.) Journal* says that the bituminous coal of the Deep River coal fields can be placed in New-York at a cost of \$2 58 per ton, and the anthracite coals at a cost of \$2 98 per ton.

North Carolina abounds in coal and iron ore; so does Virginia; so does Maryland; and so do various other Southern States. They abound in fuel with which to drive the steam-engines required to convert wool into cloth, and in the labor that might be employed in making cloth and iron, and with food to feed the laborers; and yet they waste the food and the labor, while permitting the vast treasures of the earth to remain undeveloped; the consequence of all which is, that their land is scarcely worth *cents* when it might be made worth *dollars*, and would be so made, could their people but determine to make a market on the land for the products of the land.

THE HARROW AND ITS USES.

THE use of the harrow in agriculture is of great importance, in the proper preparation of the soil for the reception and promotion of the growth of the seed, as well as the subsequent cultivation of the crop. It is next in importance to the plough, its purpose being to pulverize the ground, which has previously been loosened by that implement, and to cover the seeds which have been sown on the surface of the soil. It is also frequently used in New-

England, between the rows of corn and potatoes, beans, &c., to loosen and prepare the surface for the free use of the hand-hoe, so generally applied in all the rough and stony agricultural districts of the Eastern and Northern States.

Important as is the operation of harrowing, and second only to that of ploughing, we think this implement scarcely receives that attention which its merits claim. The operation, in many instances, is very imperfectly performed, and the implement itself very improperly constructed. An unwieldy, rough, triangular frame, with a few clumsy pins, or rather "stubs," driven through it for *teeth*, is frequently used as an apology for the harrow, which, instead of loosening and pulverizing the soil, proves a dead weight or *drag*, rendering the earth more ridgy and less porous than before its application.

The *Scotch Harrow*, as represented in Fig. 1, is, perhaps, the most perfect implement of the kind in general use. It consists of two parts, joined together by iron rods, having hasps and hooks. Each part consists of four bars of wood, connected together by an equal number of cross-bars of smaller dimensions, morticed through them. The former of these bars is about two and a half inches wide by three inches deep, and the latter two inches wide by one inch

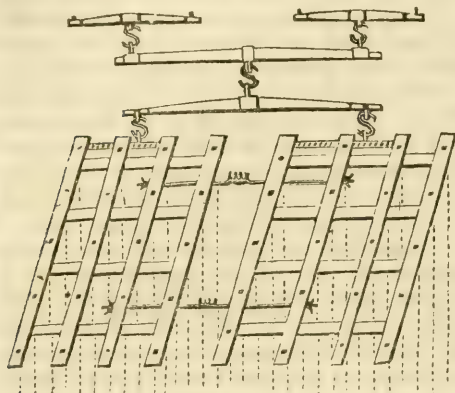


Fig. 1.

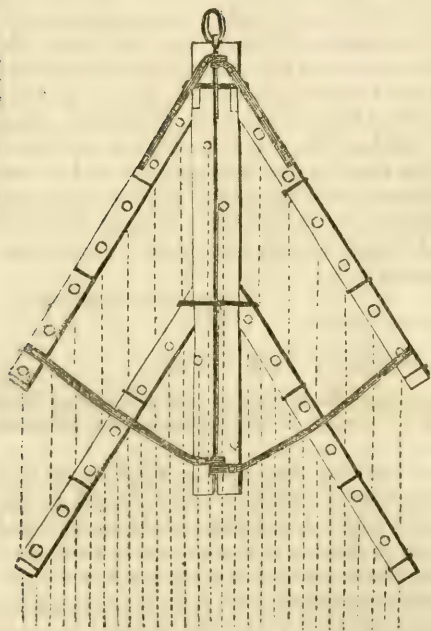


Fig. 2.

deep. The longer bars are placed at a certain angle with those crossing

them, forming the figure of a rhomboid. The teeth are placed in the longer bars, at equal distances from each other, and the inclination of these bars is just sufficient to cause the perpendiculars from each of the teeth, falling upon a line drawn at right angles to the line of the harrow's motion, to divide the space between each bar into equal parts, so that the various teeth, when the instrument is moved forward, shall equally indent the surface of the ground over which they pass. These harrows can be used either single or double.

Fig. 2 represents *Geddes' Folding Harrow*, which is generally esteemed the best. Some of the larger sizes are so constructed, that the front and rear parts can be detached, forming two single harrows, which can be used separately when desired. The two side-frames are joined together by hinges, in such a way that the harrow works the surface of uneven lands quite equally; and when one half is folded over upon the other, it is easily transported about the farm. The teeth are made of the best Swedish iron, steel-pointed, and the upper end is formed to fit a mortice made tapering from the lower to the upper side of the timber, with a screw upon the upper end of the teeth, and are made fast by nuts being screwed close down upon iron washers, which prevents all liability of the teeth to become loose and drop out, as in most kinds of harrows.

The Geddes harrow is superior to the square harrow, as it draws from one point, with a regular, not a straggling motion, and, of course, is easier for the team. Either part is easily lifted when in motion, to let off any trash that may have collected among the teeth.

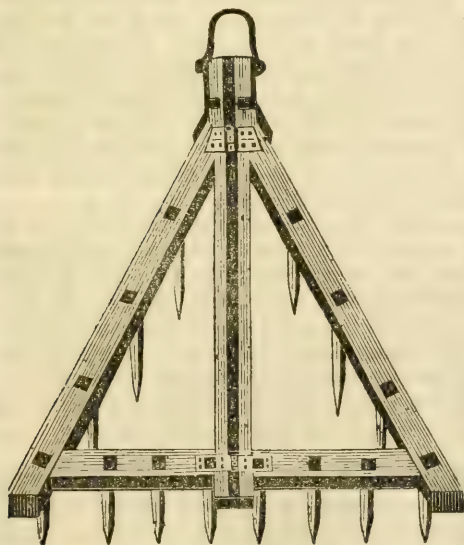


Fig. 3.

Fig. 3 is a triangular folding harrow, with the teeth like those of Geddes' harrow, but is constructed more strongly, made heavier, and more suitable for rough and stony soils. The latter is, perhaps, better adapted to this purpose than any implement of the kind in use, easily adjusting itself to any inequalities of the surface, and being sufficiently strong and heavy to loosen and penetrate the most gravelly soils.

We feel that we cannot better serve our agricultural friends than to urge upon their attention the free use of the harrow, as we are firmly convinced that, by so doing, they will find themselves doubly repaid in the productiveness of their crops. The above harrows, with the various

agricultural implements, may be obtained at the warehouse of Messrs. Ralph & Co., 23 Fulton street, New-York.

TO MAKE PRESERVES KEEP.—The secret of preserving them from change is to exclude the air. The easiest way to do this is, to brush over a sheet of paper with the white of an egg, and cover the jar, pressing it down around the edges while moist, and it will cement perfectly tight. It is cheaper, neater and better than sealing up the mouth of the jar with wax or covering it with bladder.

ENGLISH AGRICULTURE.

To the Editors of the Plough, the Loom, and the Anvil:

To an agriculturist of the mother-country accustomed to the climate and mode of tillage in England, when he arrives in the Northern States of the Union, to pursue his accustomed calling, serious difficulties present themselves, which can only be overcome by observation, perseverance, and experience.

One great hindrance to his success here is his inability or unwillingness to get rid of those ideas and customs to which he has been habituated at home. The great price which is paid here in the shape of wages, generally disheartens him; and the severity of the winter season, which renders the maintenance of live stock so much more expensive than what he has been accustomed to, induces many an agriculturist to give up his farm in despair, and seek some other employment, in his opinion more lucrative and pleasant.

It is generally admitted, that in no country has agriculture been carried to so high a state of perfection as in England, and yet this is by no means to be attributed to the natural fertility of the soil; for, generally speaking, its present great fruitfulness may be attributed to art. It is a made soil, rendered so by the numerous herds and flocks which graze in its pastures and meadows during the long summer months, and which, by reason of the mildness of the winter, are less exposed to suffering and disease.

The same process of cropping in England it would be impossible to pursue here. They have there what is termed the *four-course change*, meaning a change of crops in succession, consisting of barley, clover, wheat, and finishing with the fourth and last crop, with beans, oats or peas. Turnips are not considered a crop, as they precede the barley, and are sown for a winter supply; the ruta бага, or the Swedish turnip, as it is there called, is sown in May or June, and the common turnip in July or August. The ruta бага is used in fattening cattle, as it possesses much more rich qualities than the common turnip, which latter are grown almost solely for the purpose of feeding milch cows and sheep, when rearing their young.

The land in England, among good farmers, is allowed to rest one year in five. The land not cropped is expected to have four ploughings, and a good dressing of manure, after which, the winter-crop of turnips and mangel-wurzel is sown, and, in the following spring, barley, with which the clover is sown, which is either mown or fed off by cattle; and this is succeeded by wheat, followed by oats, beans or peas; thus completing the system of the four-course change of which we have before spoken. By this regular process, the English farmer so divides and parcels out his land, as to diversify his crops and give his whole land a tillage, rest, cleaning, and manuring once every five years.

But by this method, without other means of enriching the soil, it would soon become impoverished. This is avoided, by the large numbers of live-stock, particularly sheep, which we there consider the most profitable animals to keep, for they carry the dung-shovel at their tails, crop the herbage closer than any other creature, and their manure is second to none in point of strength and duration. A good farmer is expected to have as many sheep as he has acres of land.

The great ability of wintering this kind of stock in England, an American can have no idea of. When the breeding season of sheep commences, and the weather is open, the ewes are kept out upon dry green pastures, and driven into the yards at night, when the weather is wet and cold, where are sheds provided for them. Now it is that the great turnip crop comes into

use. In the month of November, the largest of the crop is put up and housed in the yard, under sheds, while what is left in the fields, amounting, perhaps, to one half of the crop, is fed off there, if there be no covering of snow upon the ground, which seldom lies there long enough to be of serious annoyance to the farmer.

The manner of grazing turnips in this country, in the open air or fields, is as follows : Every farmer has a certain number of hurdles, which are a kind of light frame-work, made with a sort of spline or split poles, nailed together, thus forming a frame about seven feet in length and three feet high. The two end-pieces are longer than the height of the hurdles, and sharpened at the lower ends like stakes, and are driven into the ground ; and when thus fixed and tied together with rope-yarn, these hurdles form an enclosure of sufficient strength, in which sheep are folded, and are easily removed at the pleasure of the farmer. By these means the feeder of live-stock upon turnips in the winter, easily portions off a part of a large field into which his sheep are driven by day ; and when they have consumed the food in that division, the hurdles are moved every few days, until the whole crop is eaten, and the land is thus richly manured. As soon as the spring opens, the land is broken up, and sown with barley and clover ; the latter is generally fed off by cattle, sometimes without any of it being mown, which is a most successful preparation for wheat.

The method of planting wheat in some parts of England would astonish even a Yankee. Sowing it broad-cast, in the section of country where the writer lived, would be esteemed a waste of grain, besides the great uncertainty of having a full crop. Drilling is sometimes practised, when haste is required ; but this is not thought favorable for an abundant crop. In England, wheat thrives best in a stiff, close soil, and the more it is trodden, the better. It is usually sown upon clover lands once ploughed, in October and November. The usual method in the county with us, was by dibbling. A man has a dibble in each hand, and thus prints holes upon each furrow, at about the distance of three or four inches apart, while two or three children follow him, dropping a few kernels into every hole. This seems a slow and expensive mode ; but those who have practised it, find by experience, that in the saving of the seed, and the abundance of the crop, it is the most profitable method hitherto adopted.

The barley crop in England is next in importance to the wheat, and, owing to the great consumption of beer, that article always finds a market, and the inferior quality is used for the fattening of hogs. If the grower does not obtain from three to four shillings sterling per bushel, he does not get a remunerating price for raising it ; and unless he raises from forty to fifty bushels per acre, he thinks it not a crop. No produce in England pays so high a tax as barley, when made into malt. It is taxed one shilling sterling per bushel, which, of course, has to be paid by the maltster, and not by the farmer. In the collecting of this revenue, officers of the excise are appointed in every town, to see that no fraud is practised ; but, owing to the temptation, it is supposed a great quantity of malt is made which avoids the scrutiny of all the government officers.

The cultivation of the hop is a large business among some agriculturists, particularly in Kent and the surrounding counties. A friend of the writer visited one grower of this plant, who cultivated one thousand acres with this vine. The raising of this produce brings into the market a large amount of labor for the working-hands, as the spade is used, and not the plough. This latter implement could not be worked, by reason of the care and attention

these plants require, as well as the nearness of the rows, and the great width to which the roots spread. This article also pays to the government as much in proportion as the malt; sometimes as much as one shilling sterling per pound.

Land being so cheap in the United States, there is a temptation to many to have too much of it; and it is even a greater evil here than in the mother-country, because labor there is at a much lower rate. A common working-man upon land in England, if he can be sure of earning nine shillings sterling per week the year round, thinks himself well off; and with the addition of what his children make, and the various other helps from harvest wages and aids from benevolent objects, he thinks himself comfortable and happy.

AGRICOLA.

Madison, New-Jersey, February, 1852.

DECLINE OF SOUTHERN MANUFACTURES.

ONE of the cotton factories, put in operation here a little more than a year ago, and worked by slaves, has stopped, and its machinery is advertised for sale; the other, whose operatives are free, still continues—some say successfully—but the conductor told me it was a losing business; labor is very high, and it is impossible for hands to do as much as in a more bracing, healthy climate.—*Mobile, Feb. 5, 1852.*

But a little while since, the planters were urged to build mills, in order that they might crush the Northern manufacturers, and the consequence has been that the competition between Northern and Southern mills has ended in the ruin of the owners of both. Had the tariff of 1842 been permitted to remain, the North would, long ere this, have abandoned to the South the manufacture of coarse goods, because that of fine ones would have been more profitable; and the planting States would now be studded with factories; and the consumption of the country would now be a million of bales, instead of half a million; and the price of cotton would now be fifty dollars a bale, instead of thirty; making a difference in the crop of the present year of MORE THAN FIFTY MILLIONS OF DOLLARS, which sum, large as it is, constitutes but a part of the tax imposed upon the people of the cotton-growing States by the tariff of 1846.

INCREASING THE SURPLUS OF FOOD AND DIMINISHING ITS PRICE.

"THE last Clarion paper has the sheriff's advertisement for sale at the court-house of that borough, on Monday, December 1st, of one furnace, including a grist-mill, blacksmiths' and carpenters' shops, and ten dwelling-houses, with four tracts of farm land. One other furnace, with fifteen dwellings, shops, and stores, and five more tracts of farm land attached and under improvement. One other furnace, with dwellings, mills, shops, stores, &c., with five tracts or farms of improved land. One other furnace, grist-mill, dwellings and out-houses, with three tracts of land attached, being improved farms. One other furnace, with usual necessary buildings, dwellings, shops, stores, &c., with a tract of land. At same time and place, various other lands and town lots. They have, however, this one satisfaction, that the agony, if not ceasing, is not increasing much. They sold six furnaces last court, and have six to sell this court. They will doubtless sell cheap, and that will be good for somebody."—*Pennsylvania paper.*

Every man that mines coal or ore, or makes iron, is a customer for the farmer, and aids in raising the price of the products of the farm. Every man that works in a blacksmith's or carpenter's shop, and every one employed in building mills and furnaces, is likewise a customer to the farmer; and the more numerous his customers, the larger are likely to be his prices.

Every miner driven to raise food becomes a rival to the farmer, and aids in

reducing the prices of the products of the farm. Every furnaceman, every blacksmith, every carpenter, every quarryman, and every mason, driven from the shop, the furnace, or the quarry, goes to raising food for himself and for market; and the larger the number of producers, the smaller are likely to be the prices of the farmer. Nevertheless, a large portion of the farmers of the country are engaged in closing the old furnaces, and mines, and mills, and preventing the building of new ones, with a view, apparently, to increase the surplus of food, for which we must seek a market abroad, and that at a time when prices abroad have so much diminished, that a barrel of flour is worth at Liverpool but little more than four dollars!

LIME BURNING IN GREAT BRITAIN.

BY SAMUEL CLEGG, JUN.

Wood is seldom or never used in Great Britain for burning lime; but in new countries, or those abounding in timber, it would most probably be the cheapest fuel. The method of burning with wood will consequently be explained. The kilns may be the same as those used for coal, or "field-kilns" may be erected; their construction is expeditious and economical, but somewhat precarious.

Above an oven-shaped vault a circular tower of limestone is built, which is enclosed by a wall of beaten earth, supported externally by coarse wattling, in which care is taken to leave an opening, to introduce the fire beneath the vault. No grate-bars are necessary. The charge rests upon one or two rough arches, turned with the materials of the charge itself, as in the flare-kiln described before. Under these arches a small fire is made with faggots or logs, which is gradually increased as the draught establishes itself and gains force. All the precautions before enumerated in burning the lime hold good in this case also. The proportion of wood-fuel to lime is taken from some French kilns mentioned by M. Vicat. A "field-kiln" at the Monsieur Canal consumed 1.64 cubic yards of oak billets for each cubic yard of lime burnt. At the bridge of Souillac, a cylindrical kiln, surmounted by a cone, consumed 1.70 cubic yard of oak billets per cubic yard of lime. When faggots are used, their cubic measure is of course much greater than cord-wood for the same value of fuel, and a cubic yard of lime will require from 22.34 to 30 cubic yards of such faggots. It is the practice in some places where wood-fuel is used, and the form of the kiln is that of a cylinder or an inverted cone, to interlay the lime and fuel in the charge, first placing a layer of billets or faggots, then about 12 or 15 inches of limestone, and so on, keeping the due proportion of each; but the practice is not a safe one, as, supposing the limestone not to be perfectly calcined, the charge must be emptied, and the kiln refilled, which is expensive and unsatisfactory.

Peat is also available as fuel, and so is coke, the treatment of the kiln being with them much the same as with coal. The value of turf and peat as fuel is liable to much variation, and depends partly upon their density and partly upon their freedom from earthy impurities; the quantity required to calcine 1 cubic yard of limestone varies from 2 to 11 cubic yards. 10 bushels of coke or cinders to 18 bushels of coal-dust, the whole thoroughly moistened, will burn rapidly 112 bushels of limestone. The stone for the hydraulic mortar used at the Liverpool and Birkenhead docks is obtained from the Halkin mountain, near Holywell, Flintshire. When the stone is required to be

burnt quickly, coke is used, at 16s. per ton; when not required quickly, coal is used, at 8s. 6d. per ton. The stone can be burnt quickly for as little money with coke as it can be burnt slowly with coal; but it is expensive to burn quickly with coal, or slowly with coke. The proportion of coke is generally one bushel to six bushels of stone.

Cost of Burning the Limestone.

tons.	cwt.		s.	d.		£.	s.	d.
4	10	Limestone,	-	7	3 per ton,	-	1	12 7½
		Labor on ditto,	-	1	6 "	-	0	6 9
1	10	Coke,	-	11	0 "	-	0	16 6
							2	15 10½
<i>Produce: 3 tons, at 18s. 7½d. per ton,</i>							-	2 15 10½

The quantity of any quicklime required for mixing with the other substances to form mortar, should be determined by measure, and not by weight, as the latter varies according to the length of time the lime has been burnt or exposed to the air, or to the quantity of core it contains; and, although these changes affect the quality in the measure, the results will be found more accurate than by weight.*

The measures employed are yards or bushels. The yard measure is a strong square box, without top or bottom, measuring 3 feet in height and width, and containing, therefore, 27 cubic feet. A yard is occasionally called a "measure," or a hundred of lime: a single cart-load is equal to one yard. A bushel is $\frac{1}{45}$ of a yard; and a barrow contains about three bushels.

TREATMENT OF HORSES WHEN HEATED.

MEN and horses, remarks the *New-England Farmer*, are the only animals that sweat. So say the medical men, whose business it is to investigate the wonderful living mechanism of both. The ox cools off by accelerated respiration: if heated in the furrow, he partially opens his mouth, drops his tongue, and by rapid respiration, or breathing, throws off the excess of heat which has accumulated in the system. The dog which runs at the side of the carriage through the immense heat of a July sun, dashes into the cold spring with impunity, and returns refreshed, having no perspiration to check, "when men or horses, submerged in a similar manner, would suddenly check perspiration, and if they survived the shock, it would be but to die with acute or chronic inflammation." In violent motion, the respiration of both men and horses is increased, but not sufficiently so as to carry off the heat that is generated; they perspire through the skin, the pores of which become opened or enlarged, and it is while in this condition that both are exceedingly liable to be injured, and when great care is necessary to preserve the health of either.

We saw a noble-looking animal the other day standing by the road-side, wet with perspiration, dotted with foam, and apparently highly heated. There he stood, unchecked by rein or halter, faithfully waiting his master's return. The cold was intense; the mercury being below zero! Impatiently he pawed the ice under his feet, champed the bit, and wildly flung his head

* General Pasley says, that *weight* affords a more accurate estimate of the quantity of lime than *measurement*, but this is not correct; besides, the practical difficulties in the way of weighing lime for large works would be insurmountable.

from side to side, while his lips were contracted and nostrils collapsed, giving him a fierce and unnatural appearance. No blanket covered his wet and heated body, while the keen morning air froze stiff the moist long hairs that stood out from the skin. He was evidently suffering severely. And this is no uncommon sight. So little is still known of the physiology and functions of the horse, that the man who would refuse an extravagant price for a favorite animal, suffers him to stand in the condition which we have described. If the horse escaped an attack of colic or violent inflammation in some shape, it was his good fortune, and not from any wisdom or humanity on the part of his owner.

Even in mild weather, though it may be summer, men or horses should not remain quiet in a cold draft, when heated and wet with perspiration. Millions of the colds complained of would be prevented, by observing this simple rule, and thousands of valuable lives preserved which are now annually extinguished.

But you, who value the noble animal which you control, when you "rein up" for business or pleasure, let the mantle of charity come over your steed in the shape of a good warm blanket. Depend upon it, you will find it cheaper than physic, traveling on foot, or drawing your carts yourself.

THE "BENIGN INFLUENCE" OF THE TARIFF OF 1846.

Jonesville, Michigan.

The times in Michigan are dull and hard. Wheat here, only seventy-five miles from the lake, brings forty-eight to fifty cents, and only costs ten cents to transport it there. Few will sell at these rates, and the farmers are borrowing money at from ten to twelve and a half per cent., rather than sell their wheat. . . . The crops of wheat and corn were far less extensive than usual. They were reported very large, but it is a mistake; they are not large, and the low prices paid make times quite hard.

WE give the above on high free-trade authority, the New-York *Evening Post*, a paper chiefly remarkable for its strenuous advocacy of the maintenance of British control over the manufactures and trade of the world; and we invite to it the attentive consideration of such of our readers as have permitted themselves to be blinded by Mr. Walker's promises of a great foreign market for their products. The crops of the neighborhood whence this letter was written, are stated to have been small, but the demand is still smaller; the consequence of which is, that the farmers obtain half a dollar, or even less, for a bushel of wheat, and they borrow money at one per cent. a month to enable them to store it up until the recurrence of another Irish famine; not reflecting that all Europe is now engaged in raising food of all kinds for "the great grain market of the world." But a little while since, the Washington *Union* assured its readers that the object of the manufacturers in desiring a tariff was that of having cheap food, at the cost of the farmers; but it is now beginning to be seen that what the manufacturers desired was to make a market for food. The tariff of 1842 created a market for a hundred millions of dollars of the products of the earth; and that market would, in the years that have passed since it ceased to exist, have increased to the extent of two hundred millions. The tariff of 1846 has not only prevented all increase, but it has diminished consumption to the extent of at least fifty millions, while driving into agriculture the whole increase of our population, when a large portion would have preferred other pursuits. It has thus increased the supply of food while diminishing the demand, and the result is seen in the fact, that food abounds for

which no market is to be found, and that the farmer stores it in hopes of a famine in Europe that will not come. How long will it be before the farmers and planters will learn that they it is that need protection in their efforts to bring to their sides the men who drive the shuttle and strike the hammer?

RESULTS OF JUDICIOUS FARMING ON A SMALL SCALE.

To the Editors of the Plough, the Loom, and the Anvil:

I PROPOSE, in this contribution, to give you an account of the property invested in, and the produce of a small farm of one of my neighbors, the Rev. John Perrin. I will state, without hesitation, that he is the most industrious minister with whom I ever had any acquaintance.

We have an elevated arenaceous alluvial plain, some two hundred feet above the Lamoille river, of some fifty or sixty acres, on which our village and the county buildings are located; the descent toward the river is very abrupt; our road runs east and west, or nearly so. Mr. Perrin's home farm is at the west end of the plain, and only three and a half acres level.

PROPERTY INVESTED.		PRODUCE OF FARMS.	
Home farm, 16 acres, value, ...	\$600 00	Hay, 16 tons, ...	\$96 00
Tillage, 3½ "		Corn fodder, ...	15 00
Pasture, 11 "		Corn, 125 bushels, ...	93 75
Rest, second growth.		Potatoes, 175 do., ...	43 75
Out farm, 29 acres, value, ...	500 00	Carrots, 167 do., ...	41 75
Mowing, 13 acres; pasture, 2 do.;		Pumpkins and garden-sauce, ...	10 00
hop-yard, 1½ do.; rest wood-		Avails of hop-yard, ...	190 00
land.		Dairy, ...	60 00
Stock:—pair draught-horses,...	75 00	Pork, ...	63 00
Three-year-old colt, ...	50 00	Growth of stock, ...	20 00
Three cows, \$75, three calves, \$15,	90 00		
Farming implements, ...	100 00		
	\$1,415 00	Net produce, ...	\$633 25

The pasturing of the stock is not included in the produce of the farms, which is not less than \$30. Mr. Perrin is 44 years of age, and has paid out for labor on his farm, last season, the sum of \$60.

Mr. Perrin has a barn with so many conveniences, that I am disposed to call it a model barn, of which I will give you a description. The barn is located on the slope of the plain, and the sand scraped away, and the site made level. It is 36 by 40 feet, 22 feet posts, and 16 in number. They stand on pillars of stone and brick, laid in lime cement; the sills enter the posts seven feet above the foot of the posts—three stories. The basement is seven and a half feet in height, with a plank floor over the whole, 26 by 36 feet; the planks are laid in clay-mortar, spread on the ground, three inches deep; also a plank edgewise, fourteen inches wide, laid in clay-mortar all round this vat, which is water-tight, to receive and retain the manure from the stables above. The remainder of the basement is 26 by 14 feet; the planks are elevated on sleepers, and rest on the edge of the vat, and slope toward the vat, and project over the edge of it three inches. The first ten feet from the vat is divided into three pens, for swine, calves, or a cow; with a tight floor, to convey all the droppings into the manure-vat. The remainder is a walk and stairway to the second story; a door at the north end of the alley gives ingress from the yard, for any animal wished to be confined in one of those pens; the swine are allowed to be in the pen or vat as they please, and it can be used as a yard for the cows in the summer season. Under these

pens is a cellar for potatoes, carrots, &c., and trap-doors in the walk to enter the cellar. There are two girders between the bottom of the posts and sills; it is boarded upon the posts to the upper girder, and filled in with bark from a tan-yard, all round the basement, except two doors for ingress and egress, with a team conveying muck, or removing manure. The entrance into the second story is on the east end of the barn, from a wharfing twelve feet distant, bridged over, and serves for a shed for the stock; the grade is very gentle; a plank floor over the whole of the second story, cow-stable on the south side, and horse-stalls on the north. The rest of this story is a floor to drive on into the barn, and store wagons and other farming-tools, or for a bay, if needed. The fluids and droppings of the stock are conveyed into the vat beneath, by trap-doors in the floor. The next story is scaffolding on two sides and west end; the large doors all hang on rollers at the top. The barn is double boarded all round, jets on the gable-ends, and all well lighted with glass. (See the accompanying diagram.)

THIRD STORY SCAFFOLDS, NORTH AND SOUTH SIDE, AND WEST END.

West.				West.			
Stables.	Second Story Barn Floor.	Horse Stalls.	North	South.	Door. | Basement Story.	Vat, with temporary fences to separate the swine, &c.	
Stairs.	Door. |	Bay, or place to put Farming Tools in.			Walk from Vat.	Pen for Shoats.	Pen for Hogs.
							Pen for Sow, or Cow-pen.
				Walk.		Door.	

Mr. Perrin improves every opportunity for making manure. Sods, the wash of the ditches, weeds from the garden and fields, are thrown into the vat. He realizes more from his farm, according to size and quality, than any one in the vicinity, *barely* by a thorough and *judicious* cultivation. His home farm, *as he calls it*, is a light, sandy soil, with only three and a half acres level; the rest is narrow swales, or steep side-hill, not yielding a good crop of grass, but is used for pasture-land, on account of its unevenness; such land does not yield well without extra culture. His out farm is moist land, and good for grass, and yields a good crop.

ARIEL HUNTON.

Hyde Park, Vt., February 15, 1852.

THE CHINESE OPIUM TRADE.—REV. Mr. Bridgeman, writing from China, says that the number of chests of opium, each containing 133 lbs., taken to China the present year, will exceed 70,000, and that, in exchange for these 70,000 chests, the Chinese will pay to foreigners more than \$36,000,000, and most of this in silver.

This opium is smuggled, and it was to obtain the power thus to demoralize and poison a whole people that England battered down the cities of China and massacred their inhabitants.

PROSPERITY.

IMPROVEMENTS IN NEW-YORK.—The New-York *Evening Post* states that whole rows of new houses in the upper part of the city are now standing, unsold and untenanted.

We are told by all the advocates of *British* free trade that the nation is highly prosperous, but when we come to inquire for that prosperity, it is no where to be found. The planter sells his cotton at thirty dollars per bale, when he might have fifty, had he permitted the domestic consumption of cotton to grow as it grew under the influence of the tariff of 1842. The Illinois farmer obtains fifty cents for his wheat, when he would be receiving a dollar or a dollar and a half, had he not closed the mines and furnaces, and driven their occupants into agriculture, to become competitors with him for the sale of wheat, instead of competitors for its purchase, as they desired to be. The merchant complains that the past year has been one of constant loss. The ship-owner would be ruined, were it not that *British* free trade is depopulating Ireland. The producers of cloth and of iron are already ruined; and now, to cap the climax, we are informed upon the highest British free trade authority, that in New-York, which was to be enriched by the adoption of measures that should insure to Great Britain her control over the manufactures and trade of the world, whole rows of new houses are “standing, unsold and untenanted;” and so, as we think, they are likely to remain. The city lives by the prosperity of the country, and, when the planter and farmer are being ruined, trade will not justify high rents. It is time that the people of the city and the country, of the farm and the plantation, should learn that there is a perfect harmony of interests, and that it is impossible to build up a great foreign trade upon the ruin of the vast domestic one.

PRUNING APPLE TREES.

THIS is a subject in regard to which much discussion has been elicited, and much diversity of opinion still prevails, particularly in regard to the best time for doing it. But the fact that it is always beneficial, *if properly done*, let the season in which it is performed be either in the spring, summer, autumn, or winter, proves that more depends on the *manner* of pruning than the time of the operation.

We consider the early spring months, and late in the fall, the best seasons for pruning apple trees, as the sap is not at these seasons flowing, and less danger is to be apprehended from injury to the tender branches in consequence of being bruised by the ladder or the feet of the operator; and also more desirable from the fact that the bark very soon closes over the wood and protects it from decay. The *method* taken by the farmer we consider of more importance than the time, and therefore confine ourselves more particularly to this part of the subject.

A writer, in regard to pruning, remarks: “Sometimes a farmer will mount an apple tree with an axe, and cut off one fourth or one third of its head, even branches that are from four to six inches in diameter. He says: ‘I don’t often prune, but when I do, I do it right!’ In this he errs. We have never seen a tree thus pruned do any good afterwards, especially if it was a full-grown tree. Such pruning entirely destroys the equilibrium between the branches and roots; consequently the power of attraction in the

head is too weak to keep up a proper circulation of the sap. Besides, those large wounds never heal over."

The most appropriate and the only really suitable instruments for pruning, are the saw and knife. An axe should never be used, unless the removal of dead wood requires it. The knife should be perfectly sharp and the saw fine, that a smooth surface may be left after the removal of a branch; and no portion of the vigorous tree larger than two or three inches in diameter should be removed, as the bare wood thus exposed presents a surface too broad to be covered with new bark, and consequently will soon begin to decay. It is better to prune sparingly, and prune every year or twice a year, judiciously selecting such branches as require removal, than to do it at long intervals, and deprive the tree of too large a portion of its top at once, particularly in the summer season, as the removal of much foliage will then deprive the tree of its vigor and check its growth.

A NATIONAL UNIVERSITY.

MESSRS. EDITORS: — Many of the readers of *The Plough, the Loom, and the Anvil*, are no doubt aware that much has been said of late relative to establishing a National University, founded on a plan so that all the sciences and arts will be taught, and so instituted that each senatorial or assembly district will be entitled to send one of its best students; his tuition to be paid by the district sending him, and thus enabling him to be educated in all the higher branches at the expense of the State or nation. The writer lately attended a meeting which was held in the city of Albany for the purpose of proposing plans, &c., for the establishment of a university, national in its character, to be located in that city, and to be conducted by ten or fifteen professors of the first order, who are to instruct students from different parts of the State in all the sciences of the day, and thus produce scholars who will shine as brightly as any who ever graduated from the higher institutions of Europe. The meeting was numerous attended, and addressed by some of the most distinguished scientific men of the nation.

Amongst the speakers who advocated the establishment of an institution on the plan proposed were Professors Bache and Pierce — both eminent as men of science, and of profound talents. They spoke at length of the vast amount of good that would result from the establishment of a university national in its character, and went on at some length to speak of the condition and thrift of European institutions; what profound scholars they had produced, and how we might accomplish the same results they have attained, if we would only become energetic, and employ the means we have in our hands for carrying out the plans which they urged. The professors alluded to the different studies which should be pursued in the institution, and the kind of apparatuses which should be connected with the university, in order to make it popular, and at the same time effectual in infusing the right kind of ideas into the minds of those who should attend it. *Scientific agriculture* was frequently spoken of in the course of the remarks, and the speakers stated that this science would form one of the most prominent features in the proposed institution. Prof. Pierce named several eminent persons who had expressed their willingness to become instructors in the university, and stated that if the people of the State of New-York did not embrace the present opportunity in carrying out the plans of the college, they would, perhaps, never meet with a like chance again.

Other gentlemen made remarks favorable to the plans proposed by Pro-

fessors Bache and Pierce. Governor Hunt spoke briefly on the subject, and thought such an institution would be the means of changing the character of our people, and of elevating and improving the minds of many young men.

The university which is now in operation in Albany lacks means and students, and what it wants is the patronage of the State. With this, it would at once no doubt become one of the best institutions in the world. There is no good reason why we cannot afford as good an institution of learning in America as can be found in Europe. We have the talent, we have the means, and we have energy and perseverance. Set these things in motion, and obtain a substantial charter from the State, and an institution of a deservedly high character will at once be established.

Baldwinsville, N. Y., Feb. 22, 1852.

W. TAPPEN.

HOW THE TARIFF OF 1846 AFFECTS MAINE.

"TEN years ago, the town of Houlton, Me., the county-seat of Aroostook county, the extreme north-eastern section of the State, was in a very thriving condition. The village, situated in the midst of vast forests, was very pleasant and flourishing. There were stores, taverns, one or two church edifices, &c.; several hundred United States troops were stationed there, and all was life and activity. But recently, since the settlement of the North-eastern Boundary Question, the quiet ensuing the withdrawal of those troops, *the decline of the lumbering business*, and the failure of the crops for several successive seasons, the town is dying out, and may now be said to be dead. The churches are closed, and *almost every body is moving away*.

"What is true of Houlton is also true of all the towns in the county. The region is too far north for corn, and for wheat and potatoes they raise there is no market; and though a good farm may be had for \$150, the whole county is likely to become depopulated."

Under the tariff of 1846, Canada supplies us with our lumber, and Britain with food in the forms of cloth and iron; and while one portion of the population of Maine abandons the clearing of the land, another abandons the working of it, because, with the closing of the mills and furnaces of the State, there has ceased to be a demand for potatoes, of which the earth yields largely, but which are therefore too bulky to carry to a distant market. On a recent occasion, we noticed that of a large number of persons waiting at one of the ports of the Pacific for a passage at San Francisco, more than one third were from Maine. Depopulation and weakness are every where the results of the separation of the plough and the loom.

SELECT ROSES.

COMMUNICATED FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE editor of the *Horticulturist* gives the following as the best dozen of hardy ever-blooming roses: *Perpetuals*—Madam Laffay, Giant des Batailles, Baronne Prevost, William Jesse, La Reine, Duchess of Sutherland, and Amherston. *Bourbons*—Madame Desprez, Bouquet de Flore, Souvenir de Malmaison, Pierre de St. Cyr, Mrs. Bosanquet. A dozen best roses for pot-culture, are the following: Saffrano, Princess Marie, Souvenir de Malmaison, Devoniensis, Comte de Paris, Mrs. Bosanquet, Eugene Beauharnais, Niphe-los, Queen of Lombardy, Hermosa; and for larger pots, branches to be trained, Solfaterre, and Cloth of Gold. The best hardy climbing roses for the most Northern States are: Boursault Elegans, Blush Boursault, Queen of the Prairies, Baltimore Belle, Superba, and Eva Corinne. Wiegela Rosea is, so far as tried, hardy all over the north.

When we consider the ease with which the climbing roses can be propa-

gated, either by cultivating or layers, and their rapid growth, (frequently making shoots, in good soil, of from twelve to fifteen feet in a season,) and also the great number of beautiful flowers that they bear, we are surprised that more of our cottage-homes are not adorned with them. We have in our own garden the Queen of the Prairies, raised from a small layer, four years ago, which, for the last two seasons, has borne from eight hundred to one thousand beautiful blooms. If you have but a small space to cover, and would like a variety, the above may be budded with Globe Ayrshire, (Ruga,) color white, with delicious fragrance, and with Rupelliana, (Multiflora,) purplish crimson.

R. L.

Brooklyn, N. Y., February, 1852.

SETTING KETTLES FOR BOILING FOOD.

THE importance of cooking food for fattening animals, says the *Rural New-Yorker*, having been conclusively settled, and now universally admitted, the cheapest and most economical manner of performing this process, as relates to the consumption of fuel, is worth the inquiry. Some over-particular persons, in constructing a furnace for this purpose, build a spiral flue around the caldron, on the supposition that the longer they can keep the heat in contact with the kettle, the more economical. This form of construction is bad; it destroys the draft, and renders the fire black and sluggish; and to form the spiral draft requires so much masonry to touch the kettle, that not more than one half the surface is in contact with the heat, and therefore is lost as a conducting agent.

It is not advisable to set a caldron capable of containing less than sixty gallons, and if ninety gallons, or three barrels, the better.

In laying out the plan for the brick-work, take the diameter of the kettle at the largest point; add to this twelve inches for a six-inch space on each side; and to this, twice the thickness of both walls; and, in the direction that the flue or arch is intended for receiving the wood, add two feet, so that the structure shall be two feet longer than its width.

Kettles now-a-days have a projecting flange at the top, and two horns to rest them upon the brick-work. By means of chains or ropes, suspend the kettle over the exact point where it is intended to be fixed—its bottom at the right distance from the bottom of the fire-pot, to allow a proper quantity of wood to pass under—then carry up the walls to the height of the mouth of the arch, which is to be in one end of the longest direction of the furnace. At this point, place some iron bars over the arch and one across, near to that side of the kettle, and lay over the arch, and up to the kettle, and half way round it, two courses of bricks—touching the kettle at a point where the sides commence rising—by which arrangement the fire is made to impinge against the centre bottom, and, passing past the centre, returns around the sides, and passes up the chimney over the mouth of the arch. The structure is then complete by bringing the walls to the height of the kettle, gathering in towards the top, so that the entire flange rests upon the brick-work.

By this construction it will be seen that the fire strikes against the bottom, and passes up the end, and back around the whole body of the boiler, not injuring the draft, and brings the blaze in contact with the entire surface, except where the two thicknesses of bricks touch it over the arch.

A seven or eight-inch pipe, of which a cheap, second-hand article can

always be procured, answers all the purposes required for a chimney, and costs less.

A smaller kettle, fitted with a steam-pipe and a steam-chest, is probably altogether the most desirable method of cooking food for animals; but its preparation in proper and substantial manner involves an expense of fixtures, an outlay that but few farmers are willing to encounter, for merely fattening the animal for household use.

WASTEFULNESS OF THE BRITISH SYSTEM.

THE gold discoveries in Australia have induced serious propositions for the establishment of a mint in that distant colony. As much as a quarter of a million sovereigns have already been transmitted, partly as returns for the gold which has arrived here, and partly for prospective purchases of the metal on advantageous terms. Under these circumstances, the propriety of establishing a mint either at Sydney or Port Philip is deemed indispensable. *Any thing more wasteful, looking at the risk and loss of interest it involves, than the shipment of the metal backwards and forwards, in the shape of rough gold from one side and coined pieces from the other, can hardly be imagined.*

The above constitutes one of the items of intelligence by the late arrivals from Great Britain, and we desire particularly to call to it the attention of such of our readers as deem it not wasteful to send to England the food of Iowa and Illinois, and the cotton of Mississippi and Alabama, there to be converted and stamped, and returned to the place of production. The planter sends away *five bales* of cotton, and *one bale* comes back to him in the form of cloth, whereas, for every one hundred dollars' worth of gold sent from Australia, ninety would be returned in the form of coin; and yet, to save this ten per cent., it is deemed most wise to establish a mint in Australia, whereas it is deemed unwise in the planter to attempt to save his eighty per cent. by bringing the spindle and the loom to take their places in the cotton field.

PRACTICAL RESULTS OF BOOK FARMING.

MESSRS. EDITORS:—While one cannot help noticing, in all parts of the country, some farms which appear to be growing worse and worse every year, it is gratifying to be able to recognize many that are improving. In these days of progress, it is hardly consistent for the farmer to be "lying on his oars," while all the rest of the world are advancing. There is no good reason why the farmer should not "go ahead;" the means are within his reach, if he will only avail himself of them.

While there are such pioneers in the cause as a Carey, Norton, Lee, a Mapes, and many others, why should the farmer not follow their teaching? There is no reason that I can see, unless it is the farmer's own wilfulness. That the majority of farmers do not improve much, is but too evident. There are honorable exceptions, however, and the most stubborn sometimes fall in by the power of example, and without the least possible idea that they are becoming "book farmers." Is not example, then, the best method of teaching them? I have noticed, where there was a good farmer in a neighborhood, one who made himself acquainted with the improvements of the day, and adopted them understandingly, his immediate neighbors would fall in with him in process of time, and adopt the course of what they term the "lucky farmer."

I know a farmer who, for a great number of years, followed the system of summer fallowing and sowing wheat upon the same land every other year,

until the amount per acre was reduced to about fifteen bushels. This was upon the very best kind of soil for wheat, but he was convinced that the system was a bad one, as his crop was less and less every year. About this time, he concluded to take an agricultural paper. Well, he found in it an article upon deep ploughing for wheat, and he immediately adopted it. He altered his plough so that he could put it in up to the beam, and put on to it two yoke of large oxen and a pair of good horses, and ploughed his ground twelve inches deep. The field contained twelve acres. The last crop under the old system, with ordinary depth of ploughing, was about fifteen bushels to the acre; his crop after the twelve-inch ploughing, with the same cultivation otherwise, was within a fraction of *fifty bushels* to the acre. The result was beyond all expectation. I need not add, that this example has produced wonders in that immediate neighborhood.

Very respectfully, yours,

Detroit, Mich., Feb. 13, 1852.

A. C. HUBBARD.

DIMINISHED PRODUCTIVENESS OF AGRICULTURE, A CONSEQUENCE OF THE SEPARATION OF THE PLOUGH AND THE LOOM.

For five years past, the object of our whole system has been that of closing the mills, mines, and furnaces, and driving the whole increase of population into the production of food and cotton, under the mistaken idea that we could find abroad a market for food capable of indefinite extension; and yet the foreign market now absorbs less food than it did five years since. Nevertheless, the prices of some commodities have been higher than they were before, a consequence of greatly diminished production. We now produce less wool than we did in 1846, and we have less pork and beef to sell; and the quantity diminishes from year to year, as will be seen by the following statement of the quantities passing over the New-York canals:

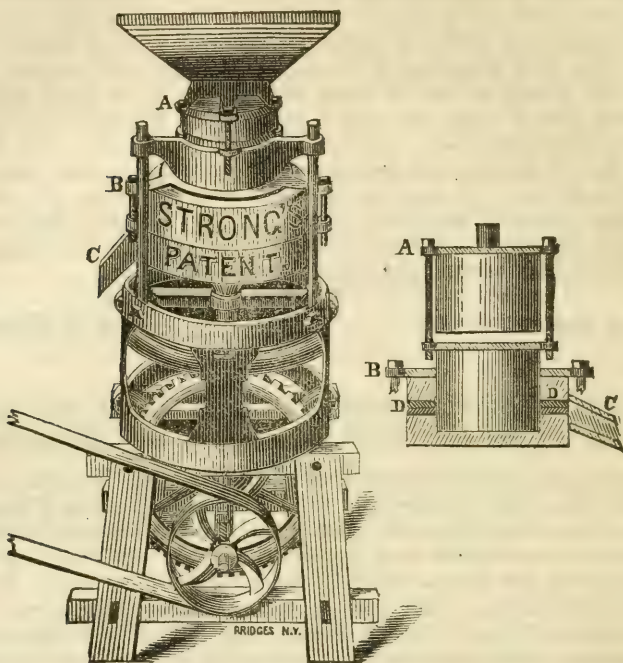
	1849.	1850.	1851.
Wool, pounds, . . .	12,731,402	11,986,000	10,527,408
Pork, barrels, . . .	73,935	46,618	45,013
Beef, " . . .	105,492	87,259	77,793

What are the prospects for pork in the next year, may be seen from the following statement:—

The correspondents of the Baltimore *Price Current* write: in Terre Haute the cutting season is closed, and the crop there will be 5000 short in weight, and 10,000 in number; \$4 50 paid for small lots. Letters from Cincinnati affirm that the packing in the West will fall 250,000 short of last season, and that the gain in weight is all a mistake, not more than one fifth of an excess in this respect being now calculated upon. St. Louis, Dec. 31.—The crop of hogs in all this region will *probably fall short of last year at least one third in weight*, consequently more than that in number. On the Mississippi river the crop will be *about one half short in number*, and on the Illinois one third in number.

Throughout the world, and in all ages, agriculture has become *more* productive, and the land-owner has become rich, as the spindle, the loom, and the hammer came to take their natural places by the side of the plough and the harrow, as was here the case under the tariff of 1842; and throughout the world, and in all ages, agriculture has become *less* productive, and the land-owner has become impoverished, as the loom and the plough became separated, as is here becoming the case under the tariff of 1846.

STRONG'S IMPROVED PATENT RICE-HULLER AND POLISHER.



THE above engraving represents an improvement in rice-hullers, which has been highly recommended by all who have tested its merits. Three screws, A, regulate the stones for hulling, which should be about one fourth of an inch apart. Three other screws, B, regulate the polisher, the teeth of which should nearly touch each other, as represented by D. C is the spout. The machine will bear a speed of from three hundred to one thousand revolutions per minute, and will clean from four to ten bushels per hour, according to the quality of the rice. Once through the machine completely finishes it, and all that is requisite after, is to blow off the hulls and dust from the rice. No screens or brush are required for home use. The weight of the machine is about four hundred pounds; it measures three by four and a half feet, and all the strength that can be put into so small a compass is given, to make it durable. We have had frequent inquiries for an effective rice-machine; and from what we have seen of the operation of the above, we think it fully realizes what is claimed for it by the inventor, and will meet the wants of our Southern friends. The machine is boxed and delivered here at one hundred dollars. Mr. S. Dunn, 197 Water street, New-York, is the general agent for this city.

THE WHEAT CROPS.—We are informed, says the last *Abbeville* (South Carolina) *Banner*, by many of our farmers, that the late freezing weather we have passed through has materially damaged the young wheat, and fears are entertained of a short crop. If this proves so, it will be a calamity our district is illy prepared for, and must necessarily increase the price of provisions, already too high.

HOW THE TARIFF OF 1846 PROTECTS AGRICULTURE.

UNDER the tariff of 1842, we raised our own linseed, and made our own oil. Under that of 1846, we have closed a large portion of the oil-mills, and most of those that remain are supplied with raw material from abroad, as will be seen by the following statement of the amount of linseed imported into the United States during the last five years:—

	Busbels.	At Boston.	At other places.	Total.
1847, ...	"	35,720	17,334	53,054
1848, ...	"	92,542	21,216	113,758
1849, ...	"	80,342	5,528	85,870
1850, ...	"	102,779	5,587	108,366
1851, ...	"	162,790	7,243	170,033

WORK FOR MARCH.

THIS is a busy month for the farmer and gardener in the Middle States, especially for those who prefer being ahead of their work. Manure, if not already got out, should be placed in small heaps, at convenient distances, and slightly covered with charcoal or plaster; when these cannot readily be obtained, some soil thrown over it will prevent the escape of the ammonia. As soon as the frost is quite out of the ground, use the roller on winter grain; but, if winter-killed, use the harrow, and sow with clover or spring grain. Prepare hot-beds for tomatoes, cauliflower, lettuce, &c.; cover them at night with mats. Towards the middle of the month, if the weather prove mild, the plants that have stood in cold frames during the winter may be set out. Prune grape-vines; plant cuttings of the grape, gooseberry, and currant as early as possible; all the buds of the gooseberry and currant should be removed, except three or four at the top. Grape-cuttings should be planted at an angle of about forty-five degrees, and the upper bud level with the surface; if about half an inch below, it is as well; keep the soil loose about them, and as soon as the weather becomes very hot, place a little straw or litter about them. Strawberry-beds should be cleaned and forked up; and raspberries that have been laid down may be uncovered, and cut back to three or four feet, according to the strength of the cane. Loosen the soil about the grape-vines, and fork in some good compost. Sow seeds of thyme, sage, savory, &c.

NEW BOOKS.

HARMONY OF INTERESTS, AGRICULTURAL, MANUFACTURING, AND COMMERCIAL.

THIS great work on political economy, from the able pen of HENRY C. CAREY, Esq., and originally published in numbers in *The Plough, the Loom, and the Anvil*, has passed through a very large American edition, many copies of which have found their way into several countries of Europe.

In the "HARMONY OF INTERESTS," the author devotes himself to a full examination of the laws which govern production and consumption, and the effect of protection in increasing capital, production, exchanges, and the reward of labor. He enters into a commercial history of our country for thirty years past, and under the various tariffs and changes which the tariff has undergone, he presents a mass of facts which demonstrate clearly the necessity and beneficent results of a protective policy. If we may attempt a brief statement of the author's views, they may be thus expressed: A protective tariff increases production and consumption, the demands for and the means of transportation, both internal and external, and accelerates the immigration of laborers.

from abroad; shipping grows with protection, because protection causes demand for labor; the laborer must be imported; and men being, so to speak, the most valuable commodity, the cost of sending the less valuable to market is diminished; in other words, the producer and consumer being placed side by side, each has a better reward for his labor, because the cost of transportation to market becomes greatly reduced. Or, as the author himself observes: "Between the interests of the treasury and the people; the farmer, planter, manufacturer, and merchant; the great and little trader and the ship owner; the slave and his master; the land-owners and laborers of the Union and the world; the free trader and the advocate of protection, there is perfect harmony of interests; and the way to the establishment of universal peace and universal free trade is to be found in the adoption of measures tending to the destruction of the monopoly of machinery, and the location of the loom and the anvil in the vicinity of the plough and the harrow."

A new edition of the *Harmony of Interests*, with a steel engraving of the author, has just been issued by the Publisher of *The Plough, the Loom, and the Anvil*, who is now ready to receive orders for the work. It forms a book of nearly two hundred and forty pages, and is offered at the following low rates:—

Bound in cloth, with a steel engraving of the author, ...	\$0 75
" " paper, plain, without engraving, ...	50

A liberal discount from the above rates will be made to the book trade, and others who purchase by the quantity. Persons ordering single copies by mail can enclose the price in a letter for double rates of postage only. They should also enclose ten cents additional in money or stamps, to prepay the postage on the book, which must be paid at the office when mailed.

All orders should be post-paid, and addressed to

MYRON FINCH, New-York.

The Fruit Garden: a treatise on the Propagation, Transplanting, Pruning, and Training of Orchard and Garden Trees, as Standards, Dwarfs, Pyramids, Espaliers, &c., the laying out and arranging different kinds of Orchards and Gardens, &c., &c. Illustrated with upwards of 150 figures. By P. BARRY, of the Mount Hope Nurseries, Rochester, N. Y. New-York: Chas. Scribner. Price \$1.25.

We do not recollect ever to have perused a work on the above subject, that has given us so much satisfaction; every thing connected with the raising and pruning of fruit trees is treated in that practical manner which those who know the position Mr. Barry occupies in his profession, were prepared to expect. The raising of dwarf apple and pear trees, which is now causing so much attention, is very fully treated of, and we would strongly recommend our readers who have only a few trees, to avail themselves of the valuable information contained in its pages. To those who are more immediately engaged in fruit culture we should deem it indispensable.

The American Journal of Science and Arts. Conducted by Profs. B. Silliman, B. Silliman, jr., and J. D. Dana, aided, in the department of Chemistry and Physics, by Dr. WALCOTT GIBBS. Second series; No. 37. January, 1852.

This truly valuable scientific journal stands foremost on the list of the most distinguished publications in this country. The ability of its talented editors and numerous correspondents is conspicuous in all its various departments of Chemistry, Physics, Mineralogy, Geology, Zoölogy, and Astronomy; and the mass of deeply interesting and purely scientific information with which its pages abound, renders it one of the most ample and valuable sources of scientific knowledge and discovery now published. The fact that British and continental publications of the highest reputation copy freely from this journal, is one indication of its true merit. Its distinguished conductors have been long and favorably known to the public, and their reputation has been well earned. The present number commences the thirteenth volume of the new series, the first twelve of which may be obtained (unbound) of the publishers, also a *very few* sets of the first series of fifty volumes complete. We allude to this as a fact of much interest to many who, we doubt not, will be glad to avail themselves of the opportunity to procure a complete set of the whole publication; the value of which, if not at the present time, will a few years hence be properly appreciated. The work is published at New-Haven, by the editors, at \$5 per annum. The back volumes by the full set, either of the first or second series, will be furnished for \$2 each.

EDITORS' JOTTINGS.

TREATMENT OF LONG MANURE.—Professor Mapes, in referring to this subject, recommends, if any unfermented organic matter is at hand, such as peat, muck, swamp mud, river-deposits, woods-earth, or even headlands, to compost the long manures with these, and thus benefit by the fermentation to decompose the more inert portions, while the valuable gases that are disengaged will be absorbed by the inert portions. At the lowest point of the heap, sink a hog-head or cistern in the ground to receive the drainage, which may be thrown back on the top of the heap once or more each week, to prevent fire-fanging. Should you ever find the cistern empty, fill it with water, and throw that on the heap, renewing the quantity until the drainage becomes sufficient to fill the cistern in three or four days after returning its contents to the top of the heap. If you have not a shed, cover the top of the heap with organic matter of some kind, or with charcoal dust, to absorb the rising gases.

Those who will continue to ferment long manures alone, should at least put them under cover, and never permit them to become dry.

Long manures may be ploughed in during the fall, provided the ploughing be sufficiently deep, and they will keep better than in an open barn-yard, for then they have the absorbent powers of the superincumbent soil to receive their gases during their decomposition. Nor can the escape of gases be material during winter, for the low temperature is not favorable to such loss.

The spring ploughing will find the manure tender, if not fully short, and more land will be rendered fertile than if the same amount of manure had been exposed for the same time in the barn-yard, and ploughed in during spring. Soils overlying long manures will be found ready for early tillage.

METHOD OF ICING CAKE.—After the cake is well baked and removed from the pan, dredge that portion which came in contact with the tin with wheaten flour, and carefully wipe it off. This will remove any grease that may adhere to the cake, and secure the adhesion of the icing. Let this be prepared by beating the whites of eggs until reduced to a foam; then add powdered loaf-sugar until the mass is of the consistence of thick paste, beating the whole well together. With this preparation spread the cake evenly over the top and sides of the same, (reversed,) of the thickness required, occasionally dipping your knife-

blade used in spreading it, into cold water during the operation. Place again the cake in a warm oven, and let it remain until the icing hardens, but not long enough to discolor it. When ornamented icing is required after the groundwork is completed, take an additional quantity of the same preparation, and color with any coloring ingredient (not poisonous) that you choose; then, using a small tin or paper funnel, trail the colored icing in such ornamental forms or figures as your fancy may dictate, and place, as before directed, the loaf in a warm oven to harden the frosting. If carefully and skillfully performed, the effect is very agreeable.

SINGULAR DEATH OF A DOG.—A dog belonging to Edward W. Lyon, Esq., of Morrisania, N. Y., came to his death a few nights since, in a singular manner. He wore a brass collar on his neck, and in attempting to jump over a picket fence, the collar caught on one of the pickets, and in that position he was found in the morning, suspended by the neck, cold and stiff. He was a large, noble animal, of the Newfoundland species, and a great favorite with the family, who sincerely regret his loss.

REMEDY FOR SCARLET FEVER.—The following cure for this malignant disease has been communicated by a physician (Dr. William Fields, of Wilmington, Del.) to the editor of the *Delaware Republican*. As the disease is fearfully prevalent in some portions of the country, we cannot better serve our readers than to give the recipe. The writer states that it is applicable in all stages of the disease, and will not fail to cure nineteen cases out of twenty, if strictly attended to. Although apparently simple, it is said to be a sovereign remedy, and may save many of our little ones from a premature grave, which is almost sure to follow the use of calomel, which universally tends to increase the disease instead of curing it. Treatment as follows: Give a mild cathartic, such as castor-oil or some gentle pills, every two or three days, and when there is fever present, sponge the body with weak ley, and give some simple tea to promote a perspiration, such as catnip, sage, balm, &c.; and for the putrid symptoms give good brewer's yeast, mixed with cold water; one tablespoonful of the former to two tablespoonfuls of the latter, for children ten or twelve years old, and younger ones according to age; to be repeated from three to five times a day.

and use as a gargle yeast and cream or milk, equal parts, sweetened with honey, and gargle the throat and mouth frequently with it; and if the throat is much swollen, poultice with yeast and pulverized slippery elm; continue the above treatment until well. I know, by many years' experience, says Dr. Fields, that this is the best and most effectual cure for the scarlet fever.

BARNUM'S AMERICAN MUSEUM.—P. T. Barnum, manager and proprietor; John Greenwood, jun., assistant-manager. Admission to the entire Museum and performance, 25 cents; children under ten years, 12½ cents. The curious attractions of the Museum, in the way of wonders in art and nature, are truly unequaled in numbers, value, variety, and interest, by those of any collection in America. There are seven spacious saloons, filled with costly and novel objects of curiosity in natural history, statuary, painting, &c., located on the corner of Broadway and Ann streets, New-York. We can confidently recommend the attractions of the American Museum to those who would enjoy rational amusement combined with instruction. The performances are always entertaining, and devoid of any immoral tendency.

THE CAUSES OF ACCIDENTS ON RAILROADS.—The following analysis of the accidents occurring on railroads from causes which may be avoided by proper care on the part of the passengers, is taken from a work recently published in London, entitled "Lardner's Railway Economy." Its publication ought to have a good effect in this country:

ANALYSIS OF ONE HUNDRED ACCIDENTS PRODUCED BY IMPRUDENCE OF PASSENGERS.

	Killed. Inj'd. Total.		
Sitting or standing in improper positions, - - - -	17	11	28
Getting off when train in motion, - - - -	17	7	24
Getting up on train in motion, - - - -	10	6	16
Jumping off to recover hat or parcel, - - - -	8	5	13
Crossing the line incautiously, - - - -	11	1	12
Getting out on wrong side, - - - -	3	3	6
Handing an article into train in motion, - - - -	1	0	1
Total, - - - -	67	33	100

The incautious railway passenger may derive a salutary lesson from this table. He will see from it that two thirds of the accidents resulting from imprudence are fatal to life, and that nearly seven of every ten of such accidents arise from sitting or standing in an improper or unusual place or position, or from getting on or off a place while the cars are in motion. This latter circumstance should be most guarded

against, for it is a peculiarity of railway locomotion that the speed, when not very rapid, always appears to an unpractised passenger to be much less than it is. A railway train moving at the rate of a fast mail-coach, seems to go scarcely as fast as a person might walk.

FORMATION OF AN AGRICULTURAL SOCIETY.—A letter from General John H. Keim, received at this office, and dated Reading, Berks county, Pa., Feb. 7th, contains the following paragraph:

"We have recently formed an Agricultural Society in our county, and purpose having an exhibition next October, which, I anticipate, will have a good effect upon our farmers."

STEAM DRILLING MACHINE.—Mr. Joseph J. Couch, of Massachusetts, some time ago perfected an admirable machine for drilling rocks, by the aid of steam-power. The machine has been in very successful operation upon some of the railroads in the Middle States. He has now made a decided improvement in it, dispensing with the gearing, and applying the steam directly to the operation of the drill. It is altogether a most ingenious and effective machine. It can be operated at a very small expense, and will do at least the work of twenty men. It will be invaluable, says the *Boston Post*, in railroad construction, or in any heavy rock-cutting; and so sure and economical is its operation, that the Hoosac tunnel itself would almost fade into insignificance before it. A model of this improved machine, we understand, has been examined and highly approved by some of the most skilful engineers and scientific men in the country.

ANNUAL CATTLE SALE.—Lewis G. Morris, Esq., of Mount Fordham, New-York, is making preparations for his annual Cattle Sale, which is expected to take place in June. Mr. Morris will not have another sale in two years, as he expects to be absent in Europe, making selections to add to his already excellent stock. Mr. Morris has done much to improve the breed of farming stock, and, if spared to carry out his present arrangements, our country will be still further indebted to his efforts for one of the most important improvements in farming.

INCREASE OF THE IRON TRADE IN ENGLAND.—In the year 1750, the entire quantity of pig-iron manufactured in Great Britain was only 30,000 tons per annum. It has now attained the enormous amount

of two and a quarter millions of tons, being an average increase of 22,000 tons yearly.

The exports of iron during the past four years have been as follows, viz.: In 1848, 657,005; 1849, 729,164; 1850, 808,262; 1851, 912,655.

At the commencement of the year 1851, the demand for Welch bars increased very rapidly, particularly for the American market, and extensive orders were taken at prices ranging from £5 1s. to £5 7s. 6d. per ton; but the prices fell off from midsummer to September, when orders were effected at an average of £4 12s. 4d. per ton. The market since has been exceedingly dull, and at present remains very inactive. The manufacture of railroad iron is carried on very extensively in several parts of the kingdom. From an inspection of the most of the rolling mills in South Wales, it has been satisfactorily estimated that 10,000 tons of finished rails are turned out weekly; and at the ports of Cardiff and Newport alone, the shipment of iron for the year 1851 was 550,000 tons!

When will our government take such a view of these facts as to stimulate it to measures calculated to produce a lasting benefit upon our own manufacturers, and advance one of the great leading interests of the people, and the wealth of the nation?

BEST WAY OF MAKING BUCKWHEAT CAKES.

—The season of buckwheat cakes brings with it many pleasant associations, hot, smoking, rich, and spongy, just from the griddle. The morning buckwheat breakfast-cake savors of health and real comfort. In order to give true zest, however, to this enjoyment, the good housewife should possess the secret of making them according to the best method, and we know of none better than the following: Take luke-warm water, and thicken it with flour to the consistency of cream; stir in about a gill of brewers' yeast, and let it stand in a warm place during the night. In the morning, add a table-spoonful of molasses, a spoonful of salt, a very little more flour, and a tea-spoonful of soda, dissolved in water, to a half gallon of bat-

ter. Let the griddle be made hot and well rubbed with lard, and the batter dropped in small quantities into it. The batter will spread from its own consistency into thin and delicate cakes; and if eaten immediately on being taken from the griddle, either with butter, molasses, or sugar-sauce, as may suit the taste, they make a dish which a prince might covet—wholesome, nutritious, and delicious. Try it.

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TWENTY-FIVE DOLLARS FOR A HOME-STEAD.—By reference to very many journals of the day, we observe that there is now a chance offered by which any person, although of very limited means, can secure a home for himself and family at a mere nominal price, and within a very short distance of New-York city. By the laws of this State, such a home is for ever exempt from the rapacity of ruthless creditors, and the poor man can there find an asylum from which nothing but the hand of death can dispossess him. As the division for the lots soon takes place, those interested would do well to make early application at the office, 208 Broadway, corner of Fulton street.

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AMERICAN LOCKS IN ENGLAND.—A company has just been formed in London, under the title of "Hobbs' Patent American Lock Company," for the purpose of manufacturing and bringing into public use in England Day and Newell's American Bank Lock.

The company is provisionally registered according to act of Parliament, and the capital proposed to be raised is fifty thousand pounds; in ten thousand shares, of five pounds each. A large portion of the amount is already subscribed. There are three trustees, and five directors. The trustees are Mr. Scholfield, of Birmingham, and Messrs. Kennard and Pickersgill, of London. Mr. A. C. Hobbs is appointed managing director. The locks will be manufactured immediately at Wolverhampton, and will be offered to the public, at prices, varying from six shillings to fifty pounds each.

OUR CORRESPONDENCE.

FARMING IN ILLINOIS.—*Messrs. Editors:*—Eighteen years ago, I left my shop in Massachusetts, and moved to the wide prairies of Illinois, and have ever since been a practical farmer. Entirely ignorant of the art of farming at first, I commenced taking agricultural papers, and have endeavored to learn from others as well as by my own

experience. I am literally a working man, and not accustomed to writing, but will try to be useful in any way, and should be happy to benefit others, even in the smallest degree. I am a decided advocate of agricultural papers, and also of farmers giving the results of their experiments to the public. I have labored with a few en-

terprising farmers in this vicinity, for ten years, to start an agricultural society, and we have more than realized our most sanguine expectations. At our annual fair, we resolved to hold a convention of farmers at this place, for the purpose of establishing an agricultural college, or to have agricultural and mechanical departments in some of the colleges already established in the State. As the convention unanimously agreed that Professor J. B. Turner, of Jacksonville, should prepare for the press his address on that occasion, we raised money sufficient to print one thousand copies for circulation, and also to present petitions to the next Assembly for an act of incorporation, and also, if possible, to have appropriated three hundred thousand dollars of university funds, for the purpose of permanently founding an agricultural and mechanical institution worthy of the State. We refer to our State fund, the interest of which now goes to the common schools, but was originally set apart for college and seminary purposes.

The grain crop in this vicinity is quite light: the heavy rains in May and June very seriously affected the corn and the wheat crop. I think that thirty-five bushels of corn, and five to twelve of winter wheat to the acre, is a full average crop. Oats were fair, heavy in the straw, but light in kernel. Potatoes were quite light, and suffered from rot. After the rains ceased, and the weather became settled, the potato ceased to rot altogether, neither did the blight any further affect the apples. (Query, Is not the potato rot and apple blight caused by extremes of weathers?) I have noticed that the potato blight and apple blight (for I think them much alike) are more severe after heavy rains, accompanied by lightning, with the temperature of the atmosphere very changeable from the extremes of heat or cold. I believe the bug and fly have to bear the curse of being the cause with about as much fairness as do the poor Indians who commit depredations upon the whites in consequence of the whisky they have drunk, or through the influence of unprincipled traders.

I will send you hereafter some items in the hog-trade in this region.—RALPH WARE, *Granville, Illinois.*

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SLATE QUARRIES IN LEHIGH COUNTY, PA.—*Messrs. Editors:*—Herewith I forward to you a brief statement of the origin and progress of the slating business in Lehigh county. At the mouth of Fell's creek, ten miles north of Allentown, the bed of the Lehigh river presents a smooth and level surface, being a slate rock. The Lehigh Coal and Navigation Company found this a

favorable spot to build a dam for the purpose of forming a reservoir, in order to create artificial freshets for their (then) only descending navigation. A dam fourteen feet high was built, which soon became widely known, under the name of "Slate Dam." This soon attracted the attention of Mr. Thomas Symmington, an enterprising gentleman and experienced slater, of the city of Baltimore, who, in 1828, came to the Slate Dam in search of roofing-slates. He soon discovered, about one mile west of the Slate Dam, in North Whitehall township, near Fell's Creek, a place where, in his opinion, roofing slates could be quarried. He took a sample to Baltimore, which, after a fair trial, were pronounced good roofing-slate. Mr. Symmington soon after returned, leased a few acres of land, and thereon commenced quarrying roofing-slates. The same year, the Baltimore Slating Company was formed, with a capital of \$13,000. The Company purchased said estate, being one hundred and sixty acres of land, on which Mr. Symmington had his lease. Mr. Symmington then transferred his interest in said estate to the Company, and a large quarry, under the name of the Union Slate Quarry, was opened, and for a term of ten years worked by the Company, their slates being sent principally to Baltimore. After that time, the quarry was leased to different individuals, until 1849, when the said Company sold the property to Stephen Balliet, jr., and Stephen Graff, who still continue to work the quarry. About the years 1843-4, a slate quarry was opened in Heidelberg, now Washington township, which soon passed into the hands of Robert McDowell and others, under the name of the Heidelberg Slating Company. They now own the most extensive works in the county, and at present have four quarries in operation, and one large establishment for manufacturing school slates, which in 1851 turned out seventeen thousand dozen of these slates. In the immediate vicinity of these quarries, within the last few years, a flourishing village called Slatington has risen, having been founded by the Company. It is located fifteen miles north of Allentown, a quarter of a mile west of the Lehigh river. Messrs. E. Morris and Labar have three quarries in operation, and also a large factory for manufacturing school slates, which, in 1851, also made about seventeen thousand dozen slates. A flourishing village, called Labarsville, has within the last few years risen in the immediate vicinity of these quarries, distant four miles west of Slatington. In 1851, there were in Lehigh county eighteen or twenty quarries in operation, with a capital of \$54,500, which gave employment to two hundred and twenty-five hands, producing twelve thousand five hundred squares of roofing-slate, which, at

the low rate of \$3 per square, amounts to \$37,500. The two factories produce thirty-four thousand dozen school slates, which, at only 75c. per dozen, amount to \$25,500. The slating business in Lehigh county is yet in its infancy, but is destined ere long to be the most important branch of trade in the vicinity, as there is room for hundreds of quarries to be opened yet; and what better inducement can be offered to capitalists and others, than to embark in the slating business in Lehigh county? I boldly assert, that more wealth is hidden in hitherto undisturbed slate rock, lying within the townships of North Whitehall, Washington, Heidelberg, Lowhill, Weisenburg, and Lynn, in Lehigh county, than can be found in all the gold-dust of the far-famed California; and especially when the Delaware, Lehigh and Susquehanna Railroad is completed, which I learn will be put under contract early in the spring, as said railroad passes through the slating district, which, in addition to the Lehigh Canal, offers every desirable facility for transporting the slates to market. These slates have already found their way into New-Jersey, New-York, Maryland, Virginia, and South Carolina, and competent judges have pronounced them equal, if not superior to the best imported Welsh slates.—Edw. KOHLER, *North Whitehall, Lehigh Co., Pa.*

CULTURE OF BLACKBERRIES.—*Messrs. Editors.*—With your permission, I will take the liberty of offering your readers a few hints on the cultivation of *blackberries*.

The blackberry is of several species, and a native of this country, growing spontaneously, and often producing abundant crops of superior fruit. The best varieties in perfection are more wholesome and of a flavor richer than either the strawberry or the raspberry.

Among the many varieties or distinct species of this berry, most are inferior in size and flavor, which has made this fruit rather unpopular with you, coming in as it does when your market is supplied abundantly with other kinds of fruit. But in this cold climate, where we have the extremes of temperature, where peaches cannot be made to flourish, and pears are uncertain, I think this berry should be considered of much importance.

There are two varieties which I think superior to all others, the first of which is the "Bush," growing straight and upright, the top of which becomes recumbent and almost free from prickles, and under favorable circumstances attaining a height of from six to ten feet. It has a large white blossom in June, the fruit of a shining black, long, ovate, or about one inch in length, and one

in circumference, very tender, of a juicy and of a sweet, rich flavor. This variety is seldom found.

The second is the "High Bush." This is a very rapid-growing blackberry, stem very tall, sometimes ten or twelve feet in height; fruit shining black, very large, oval, conical, often over an inch in diameter, very sweet, juicy, and melting, with an aromatic flavor; the fruit ripening from the first of August until the middle of September.

This fruit in perfection is not excelled by the productions of any climate. It is delicious for the dessert, excellent for pies, puddings, sauce, preserves, wine, &c., and it well supplies the place of the peach and grape.

This most wholesome of all fruits often relieves bilious and dyspeptic habits, and dysentery has often been cured by a free use of the ripe fruit. I have every reason to believe a free use of it by all classes, instead of *unripe fruit* and *flesh-meat*, would do more to lessen mortality at that season than all the "Dysentery Cordials," "Anti-cholera" drugs, that all the speculative ingenuity of men ever invented.

Soil and Cultivation.—The blackberry grows freely in a warm, tolerably dry, or rather deep rich soil; it abounds among stones, old logs, natural ledges, and on lands which have recently been burned over, which contain a good supply of alkali.

Land should be kept rich, mellow, and free from grass and weeds. Besides common manure, use leaves, ashes, and vegetable matter.

It is propagated by seeds and offsets from the root.

I would recommend to those who wish to cultivate this fruit, first, to select a suitable spot of ground; second, plough deep and well; third, have your hills from six to eight feet apart, for the convenience of ploughing and cultivation. The land once "set," they will not need transplanting for a long time.

After this, manuring, ploughing, and keeping the bushes properly thinned, is nearly all that is necessary to secure large and abundant crops of the choicest fruit.

One bush often produces a quart of the finest; a friend of mine has a bunch covering less than one rod of land, and he assured me he picked *twenty-seven quarts in one day*. I saw a spot this season which produced over one bushel to the rod, or more than five thousand quarts per acre. A few such acres of blackberries near Boston or New-York would be a fortune to the owner.

I am so very confident that great results must attend the cultivation of this fruit, that I intend putting one acre under cultivation this spring, and will endeavor to let you know the result, both by statements

and samples of fruit.—LEWIS H. SPEAR, *Braintree, Vt.*

[We shall be happy to hear the result of our correspondent's experiment, and, from our own knowledge of this fruit, have full confidence in his success. We would advise our agricultural readers generally, to give attention to the cultivation of the best varieties of the blackberry; and in regard to its productiveness, if properly cultivated, we believe all will be surprised at the result. A friend of ours, from experience, estimates *one hundred bushels* to the acre as less than an average crop.—EDITORS.]

THE POTATO ROT.—*Messrs. Editors:—*Much has recently been said in regard to the potato and its diseases. Various opinions as to the cause of the rot have been given. Some say the potato has degenerated; others think it is a bug, a fly, or a worm; but I have come to the conclusion that our warm, wet falls, more than anything else, have caused this disease. In this State, last fall, the weather was cool and dry, except a few days about the first of September, which were very warm. We had a fair yield of as good, ripe, mealy potatoes, as we used to have before the potato disease was heard of. I know farmers who practise planting on cool, dry land and have had very fair crops, when those of their neighbors were spoiled. Those who have not practised planting on *cool, dry soil*, will do well to try it, and I doubt not they will find it to be of greater value than all the preparations that will be invented in consequence of the \$10,000 premium offered by the Legislature of Massachusetts. Last fall having been cool and dry, enabled us to supply Massachusetts with this esculent; and I think, if our farmers are wise enough to select the right soil, they will be able to do the same for years to come. Even though the falls should prove warm and rainy, we have enough of the right kind of soil on our mountains, if properly managed, to supply all New-England, and also New-York, with potatoes.—L. H. SPEAR. *Braintree, Vt., January 1, 1852.*

THE CROPS IN MINNESOTA.—In my last, I promised you a further communication when I should be able to speak with cer-

tainty as to the amount of crops and current prices in the Territory. We are now settled down for the winter; the farmers are busy hauling their produce to market, and prices have become settled. For cash, these are steady and uniform, but for trade or store pay, there is considerable advance, amounting, in most cases, to 25 or 30 per cent.

Messrs. Furber, on land eight years under the plough, have raised spring wheat, of the Black Sea variety, yielding 25 bushels per acre; and on the same land, 50 bushels per acre of oats, weighing 42 pounds to the measured bushel. No manure or dressing of any kind has been put on this land.

Mr. Scofield has raised 40 bushels to the acre of spring wheat, on land not so long in use, and his wheat gave 42 pounds of good flour to the bushel.

Mr. J. W. Selby, on new prairie land, raised corn of two varieties; the yellow flint, such as is raised in New York, gave him 60 bushels to the acre; and the white flint, commonly raised in this country, 80 bushels.

Mr. H. M. Rice, on his farm near St. Paul, put in a crop of large Southern dust corn, which ripened perfectly, and was estimated by many competent farmers at 100 bushels to the acre. The above corn was on the native soil, without manure, and without any extraordinary care in cultivation.

Mr. Bailly, of Wabershaw, reports to me that his winter wheat has turned out 40 bushels per acre. The sample he produces is as fine as any wheat I have ever seen.

The past has been an unusually wet season, and not near so favorable for corn as we usually have in this climate; notwithstanding which, the grain crops have all been very productive, and our farmers make no complaints, except as to potatoes, which still suffer from disease.

The cash prices at St. Paul's stand as below:

Wheat, 75c.; Corn, 50c.; Oats, 30c.; Potatoes, 75c.; Ruta бага, 12½c.; Beets, \$1; Onions, 75c.; Buckwheat flour, 3½cts. per pound; Beef, 5a6c. by the carcass; Fresh Pork, 8a9c. the hog round; Mess Pork, \$18; Prime Pork, \$15.50; Venison, 10a12c.—P. PRESCOTT. *St. Peters, Min., Jan. 15, 1852.*

TOPICS OF THE PRESS.

POTATOES GROWN IN TAN.—William Sutton, of Salem, Massachusetts, writes to the *Journal of Agriculture* the following facts, relating to an experiment in the cultivation of potatoes:

Had I anticipated any thing like the re-

sult that followed, he says, I should have noted the facts with more particularity.

In 1850, the ground was planted with corn and potatoes. Part of the potatoes rotted. This year it was laid out in squares, fourteen paces each way. A

small coating of barn manure was spread after ploughing, and harrowed in.

Lot No. 1.—The potatoes were covered with salt hay, about six inches thick, over the whole square. Yielded four bushels.

Lot No. 2.—The potatoes were covered with slacked lime, then covered with soil, then spread half a bushel of salt over the square. Yielded four bushels.

Lot No. 3.—The potatoes were covered with soil, then a coating of lime on top. Yielded four and a quarter bushels.

Lot No. 4.—The potatoes were placed in the hills on the lime, and then covered with soil. Yielded four and a quarter bushels.

Lot No. 5.—First put a shovelful of tan in the hill, then the potatoes on the tan, and covered with soil. Yielded four and three quarter bushels.

Lot No. 6.—Put a shovelful of barn manure from the stall where my oxen were kept, and covered with soil. Yielded four bushels—the poorest lot in the field.

Lot No. 7.—Dropped the potatoes, and threw a shovelful of tan upon them, and then covered with soil. Yielded four and a half bushels.

Lot No. 8.—Dropped the potatoes, and threw a shovelful of meadow mud upon them, and then covered with soil. Yielded four bushels.

Lot No. 9.—The same as No. 8, with the potatoes dropped on the mud. Yielded four bushels.

The potatoes in Nos. 5 and 7 were up a week before the others.

In most of the parcels, except where the tan was used, there were found more or less defective potatoes. Those that grew in tan were larger, smoother, and of better quality than the others. I have grown no better potatoes than these this season. I am so well pleased with the operation of the tan, that I shall try it more extensively another season, and with other crops. I used several kinds of potatoes. The quantity of seed in each hill was nearly the same; the manner of hoeing and treatment the same throughout. I am sorry not to be able to state the facts with more precision. But if any one shall be induced to imitate my example, I hope they will be instructed by the experiment. I certainly have been.

STOP HIS KICKING.—It is not an uncommon thing to meet with horses which will kick while in harness. Such horses are dangerous to drive, and the habit diminishes their value very much. The *Ohio Cultivator* publishes a communication from Jonathan Coe, of Dalton, Ohio, giving the following simple method of preventing the practice of this pernicious trick. Take a

forked stick, about two feet long, varying a little, according to the size of the horse; tie the ends of the fork firmly to each end of the bridle bit, and the other end of the stick to the lower end of the collar, so as to keep the head up, and this will prevent his kicking. A few days' working in this manner will commonly effect a cure. Horses, he says, are more apt to kick when turning in, ploughing, or harrowing, than when doing any other work.

THE IRON TRADE IN GREAT BRITAIN.—This great staple trade of our district, says the *Birmingham Gazette*, has retained hitherto an unchanged aspect of dulness and depression. If any alteration can be noticed, it has been a further tendency to decline rather than to improvement; and the trifling transactions of the last fortnight appear, in several instances, to have been concluded upon somewhat lower terms. It would be difficult, however, to define any actual limit of variation in the prices of iron either at the present moment or during the last six months; but while first makes are commanding something near the nominal figures, it is not going too far to say that others are now to be had at 15s. per ton lower. Among the purchasers of pig-iron a strong disinclination is shown to forestal the requirements of the approaching quarter; while holders of materials are every where endeavoring to press forward their sales. From the Scotch market accounts are gloomy, reporting 3d. per ton decline. The unusually short supply of water in the various canals is also inflicting a serious injury, increasing the expense of transit both upon iron itself and the materials for its manufacture. Notwithstanding these adverse symptoms, it is still generally expected that there will be no declaration of reduction at the approaching quarterly meeting, but that existing prices will be maintained at Christmas; and some go so far as to entertain a hope of acquiring a more satisfactory position early in the spring. Among other reasons for such an opinion, it is stated that the first-rate works are tolerably well supplied with orders, and maintain their quotations with firmness; that no accumulation of stocks, either in wrought or unwrought iron, has taken place during the last twelve months of depression; that the principal evil felt is rather the impossibility of obtaining remuneration than an absolute scarcity of demand; and that, while it is impossible that the home consumption should suffer further, the commencement of the spring trade will bring an additional accession to the continually increasing amount of export demand sufficient to warrant higher

pretensions. Of the correctness of such views, those who are interested must, however, form their own judgment.

WASH.—Heavy rains, says Caleb Cotter in the *Maine Farmer*, wash from hilly lands some of their best parts. It is the best, because it is the finest portion—nearest to that state when it is suitable for the food of plants.

Some have adopted the plan of ploughing only the higher parts of the hill-side. The wash that comes from the ploughed land is then caught in the grass below, keeping the soil continually rich. There is another mode of saving the wash which can be practised to advantage in many places, which is simply this: Dig a hole in the bottom of the drain through which the wash will be carried, of a size to suit circumstances, and, if properly constructed, it will be filled with wash, which can be carted away to do good.

These sediment holes should be made where the water runs slowly, for the wash has more time to settle; and the side from which the water runs off should be as high as that from which it runs on, otherwise a fall will be made which will not allow the wash to settle.

The wash of the drains of buildings can be saved in the same manner, where expenses cannot be spared to save in a better way this valuable fertilizer. Charcoal, plaster, burnt muck, or some other deodorizer, should be thrown in occasionally, to fix the valuable, yet unwholesome and unpleasant gases.

STEAM STONE-CUTTING.—There is, at the foot of Twenty-eighth street, East River, one of the most extensive stone-cutting establishments in the city. It is the establishment of the Empire Stone-dressing Company, and is described in the *New-York Sun* as occupying about five acres of ground, and employing a steam-engine of one hundred horse-power. Huge blocks of stone are lifted, by steam, from the vessels at the dock, and placed upon a railroad track extending to the main building, and conveyed by means of a truck to the remarkable machine. The adjustment of the cutters is but the work of an instant, and then, by the push of a lever, the stone chips begin to fly like shavings from a board. One of these machines can do more work in ten minutes than a man can do in a whole day by hand. Our mechanical readers can form an idea of the appearance of the steam stone-cutting machine when we tell them that it closely

resembles Daniels' board-planing machine, the cutters of which are placed at the extremity of horizontal arms, and with them revolve, cutting the wood as it passes slowly along below. The cutters of the stone machine are, however, entirely different from any others. They consist of small, thin, steel wheels, sharpened to an edge, so that, while passing over the stone, they revolve, but at the same time cut. It is in this peculiar formation of the cutters that the value of Wilson's patent consists. This rolling cutter produces no jarring of the stone, though the power applied to drive it is of course tremendous. The rapidity with which the stones for the fronts of buildings, columns, door-steps, &c., are dressed off by these machines, is truly astonishing. The steam rubbers, which give the finishing touches, are simple, but very effective. The carving and moulding is not done by machinery, only by hand. The brown stone for the new Court House in the Park, and many other buildings, is being done at the Empire Works. All the tools and repairs required in the establishment are made in the concern. Among other curiosities in the blacksmith's shop, is a forge made of wood, lined with fire-brick, and so arranged that three men have access to the fire at the same time, without troubling each other at all. The buildings are heated by the exhausted steam.

TO PREVENT THE CROUP.—A medical correspondent of the *Mirror*, in an article on this disease, says: "The premonitory symptom of croup is a shrill, sonorous cough. The patient is not sick; has no fever, as often in a common cold; is lively, perhaps even gayer than usual; his hands are cool, his face not flush, possibly a shade paler than usual. The solitary symptom may last a few days with no material increase or abatement, and without attracting any notice; suddenly, however, the disease, hitherto latent, bursts forth in all its fatal fury, and too often continues its ravages, unchecked, to the dreadful consummation. The remedies for this symptom of croup are simple, and in most instances perfectly efficient. They are: a mustard poultice, or a strip of flannel dipped in oil of turpentine or spirits of hartshorn, applied to the throat, and nauseating doses of Hive's syrup to be continued as long as the cough remains. By this timely employment of mild agents, I unhesitatingly assert that a multitude of lives might be saved every week, that are now lost through negligence and delay."

EDITORIAL AND SELECTED MISCELLANY.

THERE is a knitting machine in Philadelphia which knits three hundred and eighty stitches at each turn of a small crank, which crank may be easily turned by hand from one hundred to one hundred and fifty revolutions per minute, making from forty to sixty thousand stitches per minute, or at the rate of about three millions per hour. . . . In the neighborhood of Zanesville, Ohio, the cold has been so severe that the fruit buds of the peach trees have been destroyed, and there is but little hope of peaches the next season. . . . THERE are fourteen editors in the Massachusetts Legislature, and six printers in the Pennsylvania Senate. . . . PRAYING *frequently* helps to praying *fervently*. Be assured, it is better to wander *in* prayer than to wander *from* it. . . . THURLOW WEEP, now in Paris, has found a painting of the Genessee Falls, N. Y., executed in 1798 by a brother of Louis Phillippe, while he and the King were traveling through that State. . . . THE better animals can be fed, and the more comfortable they can be kept, the more profitable they are. . . . FROST takes effect more readily on roots that have been dug up, than those which are left in the ground; therefore, either give your store roots complete protection, or let them remain well covered in the ground. . . . A STRONG horse will work all day without food, but keep him at it and he will not last long. . . . THE first drawn milk contains only 5, the second 8, and the fifth 17 per cent. of cream. . . . THE tobacco crop of Missouri for 1851 is estimated at from 14,000 to 15,000 hhds., against 12,000 to 13,000 in that of the preceding year. . . . WHEN you retire to bed, think over what you have been doing during the day. . . . GOV. JOHNSON has been elected President of the Alleghany Railroad. . . . WHEREVER you see persecution, there is more than a probability that truth lies on the persecuted side. . . . A BILL has been reported in the Legislature of Indiana, and will probably become a law, providing for an annual appropriation to remove free negroes from the State to Liberia. . . . THERE is this paradox in pride: it makes some men ridiculous, but prevents others from becoming so. . . . THE Maine Liquor Law, which had passed the popular body of the Rhode Island Legislature, was lost in the Senate: Yeas, 11—Nays, 20. . . . A BARE pasture enriches not the soil, nor fattens the animals, nor increases the wealth of the owner. . . . THE Land Reformers and Industrials generally, assembled at Military Hall, New-York, on Feb. 18, it being their Fourth Annual Banquet, forming one of the largest and happiest social gatherings of the season. . . . THEY who drink away their estate, drink the tears of their widows, and the very blood of their impoverished children. . . . AT Tallahassee, Fla., lately, ice formed to the depth of three-eighths of an inch, and the fish were so chilled as to be unable to navigate. The vegetables were all frozen. . . . A MAN caught in a railroad collision, remarked that presence of mind might be good, but absence of body was better. . . . It is easy to wish for heaven, but difficult to get a heavenly mind. . . . THEEE men were frozen to death in the vicinity of New-Orleans, during the recent cold weather. . . . THE pleasure of doing good is the only one that does not wear out. . . . A YOUNG Irish student, at a veterinary college, being asked, if a broken-winded horse should be brought to him for cure, what he would advise, promptly replied: "To sell him as quick as possible." . . . THE amount of Kossuth's bill at Brown's Hotel, Washington, (\$3,500,) has been paid out of "contingent funds," appropriated by Congress for miscellaneous purposes. . . . THE inhabitants of New-York, it is estimated, spend \$20,000 a day upon their public amusements. . . . MORTIMER LIVINGSTON, F. W. Edmonds, Auguste Belmont, Watts Sherman, and Alfred Pell, have been appointed trustees to obtain subscriptions to the amount of \$200,000, for the purpose of erecting a building for the World's Fair to be held in New-York. . . . COWS well fed in winter give more milk in summer. An ox that is in good condition in the

spring will perform more labor, and stand the heat of summer better, than one that is poor. . . . MR. CHARLES L. BRACE is preparing for publication the narrative of his travels and adventures in Hungary in the year 1851, with his observations upon the political organization and state of the country. . . . A WHOLE family was destroyed in St. Louis, Mo., on the night of the 31st Jan., by the unconscious inhalation of gas while asleep. . . . BEAUTIFUL crops are more profitable than poor ones. Make the soil rich, pulverize it well, and keep it clean, and it will generally be productive. . . . In Genoa, out of a population of 120,000, there are 14,000 monks, friars, nuns, and ecclesiastics of various kinds. . . . MESSRS. JAMES G. KING & SONS paid, a few days ago, \$250,000 on account of the purchase by English capitalists of the Mariposa estate of Col. Fremont. . . . MEN of a lively turn and generous hearts should be born to fortunes; gain them they seldom will. . . . THE dry goods merchants of Baltimore state that one-third of their business operations during the past year has been conducted by means of the telegraph. . . . THE Pennsylvania Legislature has before it the report of a bill from a Committee on Banks of the Senate, to allow issues of one, two, and three dollar bills. . . . THE number of chests of opium, each containing 133 lbs., taken to China within the year, is stated at 70,000, in exchange for which the Celestials paid \$36,000,000, mostly in silver. . . . FARMER'S sons had better learn to hold the plough and feed the pigs, than to measure tape and count buttons. . . . THOSE who have gardens or small allotments of land are strongly advised to cultivate parsnips, which are much superior to carrots, both for the table and for the feeding of pigs and other animals. . . . MISS CAROLINE CHESEBRO will shortly present the public with a new novel, of which we hear the best possible report from those who have been favored with a sight of the proof-sheets. . . . FORTY-ONE thousand emigrants landed in Canada during the year 1851. . . . MINNESOTA is about four times the extent of Ohio, and reaches 675 miles from south-east to north-west, and lies between north latitude 42° 30' and 50°. . . . MR. B. H. KINNEY, of Burlington, Vt., has just executed a statue to the memory of Ethan Allen, and claims that it is the first statue ever sculptured in that State, and, he believes, the largest in America. . . . WHAT ought to be done to-day, do it, for to-morrow it may rain. . . . MR. R. H. STODDARD is about to publish a volume of Fairy Stories, for the special benefit of the little folks. . . . THE entire yield of California in 1851 is estimated at \$75,000,000. . . . It is stated, that among the millions of farmers in the United States, there is not one Jew. . . . SEVENTY years ago, it cost five dollars to have a pound of cotton spun into yarn; it now costs thirty cents. . . . AN old lady who visited the celebrated statue of Powers' Greek Slave, a day or two since, exclaimed to her daughter, as her eye rested on the snowy marble: "La, Jemima, it ain't a nigger after all!" . . . ON the 30th of January, upwards of 310,000 bales of cotton were shipped at Mobile for Liverpool. . . . THE Rev. Dr. Nott, brother of President Nott, of Union College, celebrated at Franklin, Conn., on the 21st ult., the ninety-eighth anniversary of his birth. . . . To preserve books from insects, introduce into every volume some leaves of a pungent odor, such as rosemary, or submit them to the vapor of oil of turpentine. . . . THE profits of the Penitentiary of Louisiana, during the year 1851, were \$12,639 67. . . . Two of the sons of the late Rev. Archibald Alexander, D.D., are now preparing a memoir of their venerated parent. . . . PUMPKINS, squashes, &c., may be kept through the winter in any dry room to which frost has no access. . . . ALL who wish to be rich must spend less than they earn. . . . GROUND once well ploughed is better than thrice poorly. . . . THE city of Portland, Maine, is a city of 20,000 inhabitants, and yet, during the month of November last, not a single row occurred in its streets, nor a single person was committed to the watch-house. . . . THE House of New-Jersey has passed an act admitting Virginia Stocks among the Securities to be given for circulation by the Free Banks of that State. . . . THE social feelings have not been inaptly compared to a

dark heap of embers, which, when separated, soon languish, darken, and expire; but placed together, they glow with a ruddy and intense heat. . . . In the United States, it is estimated that there are 16,682 preachers of the various Christian denominations. . . . LEEKS, beans, garlic, asparagus, sea-kale, artichoke, and others of this description, may be preserved by means of vinegar or salt and water—say 4 lbs. of salt to a gallon. . . . THE Lafayette Bank of Cincinnati is calling in its loans, preparatory to winding up its business. . . . On the 10th of Feb., the Board of Aldermen of Louisville again decided not to invite Kossuth to their city. . . . A RICH soil will produce good crops without manure, but will soon tire. . . . In Carter county, Ky., there is a natural bridge across the Rockbridge branch of the Cany Fork of Little Sandy. It is 195 feet span, 12 feet wide, 20 feet thick in the middle of the arch, and 107 feet above the water. . . . GOLD is the god, the wife, the friend, and the money-monger of the world. . . . THE New-York correspondent of the *Philadelphia Ledger* says, that Dr. Spring's church will probably be leased by the Government for the new Post-Office. . . . THERE is a project on foot for a railway along the west shore of Lake Michigan, and books have been opened for subscription. . . . THE court of appeals in Kentucky have decided, in a case involving the right to tax the citizens for railway subscriptions, that the tax is constitutional and obligatory. . . . YOUNG ladies who have the good fortune to become farmer's wives will find it more profitable to know how to make Johnny cake and cheese, than to play on the piano. . . . OUT of all the subscribers to the *Spirit of the Times* last year, only seven had to be dunned—five of whom were dead, and the money of the other two had been stolen from the Post-office. . . . THE following simple remedy for scarlet fever is published:—"Take of good clean fat bacon a sufficient quantity, and rub with it the skin of the patient." . . . MORE persons fall out concerning the right road to heaven than ever get to the end of their journey. . . . GUY FAWKES' cellar, which lay below the temporary house of Parliament, has been completely demolished. . . . MR. G. R. McFARLOW, of Holidaysburgh, has given Kossuth a *ton of cannon balls*! . . . THE gates of Constantinople, which were made of cypress, stood entire from the time of Constantine, their founder, to that of Pope Eugene IV., a period of 1,100 years. . . . THE Society of Friends separated in New-York in 1828. The Hicksites, at their last meeting, agreed to pay over to the other division \$25,000, or one half the estimated value of the property at the time of the separation. . . . YOUNG ladies educated to despise mankind, generally finish their studies by running away with the footman. . . . FROM recent statistics, it appears that there are in the United States 25,000 lawyers. The State of New-York alone is said to have 4,740. . . . THE Legislature of Wisconsin have adopted a resolution welcoming Kossuth to the country. . . . A QUIET mind, like other blessings, is more easily lost than gained. . . . THE Lunatic Asylum at the city of Lexington, Ky., was destroyed recently by fire. . . . In the State of New-Jersey there are 1,612 school districts, where children are instructed on an average nine months in a year. . . . AT Cleveland, nine ladies are studying the Homœopathic system of medicine. . . . RESORT to sermons, but to prayers most; prayer is the end of preaching. . . . THE population of Oregon is estimated at 20,000. It would be considerably larger if the Indians were counted. . . . THE total number of newspaper stamps issued in the year 1850, in England and Wales, was, of penny stamps, 65,741,271; and of halfpenny, 11,684,423. . . . MISS ALICE CAREY has in press a new volume of ballads and other poems, written during the last two years. . . . It is often extremely difficult in the mixed things of this world to act truly and kindly too; but therein lies one of the great trials of man; that his sincerity should have kindness in it, and his kindness truth. . . . THE State of Wisconsin, which is but four years old, has a school fund of \$764,109. . . . On the 9th ult., a gold medal, of beautiful design and workmanship, was presented to Henry Clay, at Washington, by a committee of his friends

from New-York. . . . THERE are \$385,500 capital absorbed in plank roads leading to the city of Detroit. The length of these roads in less than a year will exceed 250 miles. . . . It is estimated that one thousand German emigrants have settled at Cincinnati within the last sixty days. . . . NOTHING elevates us so much as the presence of a spirit familiar yet superior to our own. . . . THE Legislature of Rhode Island have passed a bill abolishing capital punishment in that State. . . . A DAIRY-MAN was awake by a wag at midnight, with the announcement that his best cow was choking. He forthwith jumped up to save the life of Brumme, when, lo! he found a turnip stuck in the mouth of the pump. . . . THE ear of a friend is the sanctuary of evil reports; there alone they are safely preserved. . . . JOSIAH QUINCY, sen, though past the age of fourscore, is said to be arranging a municipal history of Boston, with whose fame his public career is closely associated, and over whose government he was placed for six successive years. . . . SMALL and steady gains give competency, with tranquillity of mind. . . . WEEDS that grow unmolested around the fences, stumps, and stones, scatter their seeds over the farm, and are very likely to grow. . . . SPINACH may be kept through the winter in the bed in which it has been grown; it will only be necessary to cover it slightly with straw. . . . NATIONS in a state of war are like individuals in a state of intoxication; they frequently contract debts when drunk, which they are obliged to pay when sober. . . . MEN with few faults are the least anxious to discover those of others. . . . THE shortest and surest way to live with honor in the world, is to be in reality what we would appear to be. . . . HE that accustoms himself to buy superfluities, may, ere long, be obliged to sell his necessities. . . . NEVER be idle. If your hands cannot be usefully employed, attend to the cultivation of your mind. . . . Good company and good conversation are the very sinews of virtue. . . . STRONG passions work wonders when there is stronger reason to curb them. . . . If any one speaks evil of you, let your life be so that none will believe him. . . . KEEP good company or none. . . . WHEN you see the fence down, put it up; if it remains until to-morrow, the cattle may get over. . . . THE *New-Orleans Bulletin* states, that on the reception of the President's Message in that city, one of their fast composers set up four thousand ems in two hours ten minutes; a feat, it says, which cannot be beat any where. . . . THE *Philadelphia Ledger* says it is generally conceded that the opening of spring trade in that city will be followed with unusual buoyancy and a general rise of prices. . . . A CHINAMAN of San Francisco says there are about three thousand five hundred Chinese in California. . . . THE *Journal* announces the death, in Missouri, of Hon. P. S. Loughborough, one of the brightest ornaments of the Louisville (Ky.) Bar. . . . THE Governor's salary in Tennessee has been increased by the Legislature from \$2,000 to \$3,000. . . . Five citizens have recently died in Albany, whose united ages amount to 436 years. The eldest was 95, and the youngest 82 years old. . . . SEVERAL merchants at San Francisco have recently subscribed \$1,000 to the Washington National Monument. . . . THE Graduates of Amherst College, of the class of 1832, will hold a "vigintal" festival, August 11, the day preceding Commencement. . . . It is calculated that flax-cotton, prepared by Claussen's method, can be furnished to the manufacturer at six cents per pound, and leave ample margin for profits to those who produce the flax and prepare it. . . . A BILL to prohibit colored mechanics or masons, being slaves, or free persons of color, being mechanics or masons, from making contracts for the erection of buildings, &c., has been introduced by Mr. Woolsey into the lower house of the Alabama Legislature. . . . NINETY persons were killed and forty wounded by railway accidents in the State of New-York during the past year. Not one was killed in his seat. . . . TALKING about women voting, the *Burlington Sentinel* says; Cradles are the ballot boxes for women, in which they should deposit, not votes, but voters. That makes a Warwick of every mother of 'em.

The Plough, the Loom, and the Anvil.

VOL. IV.

APRIL, 1852.

No. 10.

THE WORKING OF BRITISH FREE TRADE.

FROM the first hour of the existence of this journal, it has been our rule to lay the arguments of our opponents, and in their own words, before its readers; and the reason for so doing has been, that we have wished to place them in a position to think and judge for themselves as to the advantages or disadvantages that have elsewhere resulted, and must here result, from carrying into effect the doctrine of ADAM SMITH, when he taught that, in the natural course of things, the artisan went to the place at which the food and the raw materials were produced, *there* combining them together so as to fit them for cheap transportation to distant markets, to the great advantage of the farmer and planter—of JEFFERSON, when he taught that the time had come when the manufacturer should take his place by the side of the agriculturist—of MADISON, who taught that it was not only constitutional but expedient to protect the farmers and planters of the country in their efforts to draw around them those who would consume their food while driving the shuttle and striking the hammer—and of JACKSON, when he taught that we had been “too long subject to British merchants”—that “it was time we should become more Americanized”—and that that object was to be accomplished by aid of “adequate and fair protection.”

Unlike our opponents, we desire to conceal nothing. We make no appeals to the ignorance of our readers by presenting them with figures so arranged as to give to falsehood the appearance of truth, and grouped together in such masses as almost to defy examination, even by those most conversant with the real facts of the case. On the contrary, we republish the figures and the words of our opponents, letter for letter, inviting them to do the same by us, and pledging ourselves, in return therefor, to republish their arguments in disproof of ours; and this we do because we seek THE TRUTH alone, and hold ourselves ready at any moment to abandon the cause of protection to the American farmer and planter, laborer and mechanic, whenever it can be shown that that is not *the true, the short, the profitable, and the only road to perfect freedom of trade.*

In accordance with our rule, we now republish a portion, and will on a future occasion give the remainder, of a speech in Congress, recently delivered by Hon. Robert Rantoul, jun., member of the House of Representatives for Massachusetts, a gentleman who has but recently made his first appearance in the general council of the nation.

The question before the House at the time of the delivery of this speech was that of appropriating public lands in aid of a railroad to be constructed in Iowa, and the ground taken by the speaker was, that the great trade of

this country was in future to be between the Mississippi Valley and foreign nations, and *over* the less favored lands of the Atlantic States, and that the prosperity of the whole Union was to be promoted by the most rapid extension of the system of Western railroads, while the West itself was to be especially benefited by the vast addition that would be made to the value of its land by thus facilitating the exchange of the commodities its people had to sell for those that they required to buy :—

“What makes,” said the Hon. member, “lands within five miles of a great city more valuable than those a hundred or five hundred miles distant? It is simply because the produce of that land has a market, and because the time and expense of getting to that market is comparatively small. Diminish the time and expense of reaching a market from a section of land in the State of Missouri, and you raise the price of that land instantly and largely the moment you do so. Now, sir, of all the inventions that science has struck out, a good railroad is the machine that shortens the time, and lessens the expense, and puts a market at your door most effectually and most surely. That, this bill proposes to do for the inhabitants of Missouri along the line of this road, and proposes to do it in a manner which will not draw from the national treasury one dollar, and which will not prevent from passing into the treasury one single dollar; for you will not in Missouri, you will not in any State where a railroad is needed—and, if it is not needed, it ought not to be constructed—I say, you will not fear, but may be certain that the demand for land, at double prices, will be much more rapid than at the ordinary prices elsewhere.”

“Of all inventions, a good railroad most raises the value of land; for,” said the Hon. gentleman, “it enables the farmer to go to market.” Further consideration might, we think, have satisfied him that there was one still greater invention—the one described and recommended by ADAM SMITH—to wit, that which brings the market to the farmer’s door, and thus destroys the need for transportation, even by a railroad.

What is it that makes land valuable? What has made it every where valuable? Proximity to market; bringing the consumer to the side of the producer. The land of Belgium is of the highest value of any in the world, because there the consumer and the producer are most completely in connection with each other. That of France has enormously increased in value as the consumer has more and more taken his place by the side of the producer. So has it been with that of Northern Germany, since the adoption of efficient protection has, to so vast an extent, enabled the makers of cloth and of iron to take their places by the side of the producer of corn and potatoes, and enabled the latter to enrich their land instead of exhausting it, as they before had done, and as we do now in almost every quarter of the Union.

What destroys the value of land? The separation of the consumer from the producer; for that is invariably followed by exhaustion of the land, and its abandonment. For the last two centuries, no effort has been spared to prevent them from coming together on the land of Ireland; but all efforts failed until, at the Union, provision was made for the abolition of all protection, the result of which is seen in the fact that a large portion of that country is now on sale for the mere amount of the moneys that, in better times, were lent to its owners on mortgage security; while famine and disease are gradually exterminating the population. In India, *British* free trade has annihilated the domestic manufacturer, and, with each step in the progress of the operation, land has lost its value; and it has so done, because, as in Ireland, the people have been more and more compelled to depend on the distant market. In Portugal, such, too, has been the case, *British* free trade having ruined the landholders and degraded the people, and rendered the nation so powerless as to be an object of pity every where. So, too, with Turkey. There *British* free trade

prevails to a degree elsewhere unknown, and the result is seen in the annihilation of the value of both labor and land, and the utter prostration of the nation. Every where land acquires value, and its owner becomes enriched, as the consumer is more and more brought to take his place by the side of the producer; and every where it loses its value as the producer is more and more compelled to depend upon the distant market, because *the cost of transportation constitutes the first tax to be paid by both land and labor*, and because the cost of going to market must be paid by the man who has either labor or its products to sell, be the latter either cotton or cotton cloth.

The object of the tariff of 1842 was that of lessening the distance of the consumer from the producer. How far that object was accomplished, during the brief period of its existence, is seen in the fact that the production of coal grew from one million one hundred thousand to three millions of tons; that of iron from two hundred thousand to more than eight hundred thousand tons; that of cotton cloth from two hundred and sixty-seven thousand to half a million of bales; and that of woolen cloth from fifty to eighty million of pounds; while that of railroad iron, the manufacture of which in 1842 had no existence, had attained in 1847 an extent of one hundred thousand tons. To do all this work had required the opening of numerous mines, the building of numerous furnaces and mills, the opening of numerous roads, the creation and extension of numerous villages, and the erection of a vast quantity of spindles, looms, steam-engines, and other machinery; and the smallest estimate that can be made of the quantity of labor thus applied, *in the single year 1846*, to the production of these various species of machinery for the production of coal, iron, cloth, and the numerous other articles the manufacture of which grew up in the period from 1842 to 1847, would be thirty millions of dollars; while the additional value given by labor to the coal, the ore, the cotton, the wool, the hemp, and the numerous other products of the earth, exceeded that of 1842 by at least a hundred millions of dollars—making a total *increase* in the domestic market thus created for the fruits of the earth, in 1846 as compared with 1842, to the extent of at least *a hundred and thirty millions of dollars*. This was assuredly carrying out the views of the Hon. member for Massachusetts. Land, according to him, acquires value as you “diminish the time and expense of reaching a market.” The tariff of 1842 caused the opening of mines and the building of mills in Massachusetts and in Alabama, in Connecticut and Ohio, in Pennsylvania and Tennessee, in Rhode Island and in Georgia; and every mill and every furnace that was built made a market for food and cotton, to be consumed by the men who built it, and a further market for both for the supply of the people who worked in those mills, furnaces, and mines. Further, each mine, each mill, and each furnace, diminished the *necessity* for applying labor to agriculture; and thus, while they *increased the demand* for the products of the earth, they *diminished the competition for the sale of them*, to the double advantage of the farmer and the planter.

The object of the tariff of 1846 is directly the reverse. Under it, we build no mills or furnaces, and we close old mills, and furnaces, and mines. Under it, we are gradually closing even the old market for labor, and are driving not only the whole increase of population, but much of that which previously existed, into agriculture, thus increasing the number of producers while diminishing the number of consumers. From day to day, as the old mills and furnaces are being closed, there is arising an increased necessity for looking to the distant market, precisely as, under the influence of *British* free trade, has been the case with Ireland and India, Portugal and Turkey; and yet, singu-

larly enough, if we are to believe the statements of the Hon. member, the policy which has ruined those states is now enriching us; while that which is enriching and strengthening Belgium, Germany, and Russia, produced no effect but that of impoverishing and weakening us.

We now invite our readers to the perusal of the statement of *facts* furnished by the Hon. gentleman, and of his views respecting the working of the two systems of protection and *British* free trade, begging them, while reading it, to bear in mind—

First, That the position taken by him is, that proximity to market increases the value of the land and of its products.

Second, That, whatever else may have been the effect of the tariff of 1842, it had unquestionably the effect of creating a vast domestic market for the land and its products, and should, therefore, in strict accordance with the principles of the speaker, have had the effect of augmenting the value of both.

Third, That the avowed object of the tariff of 1846 was the substitution of the foreign and distant market for the domestic and near one, and that that object is being attained as the mills, furnaces, and mines of the Union are being closed; and that, in strict accordance with the doctrines of the Hon. member, its effect should be the diminution of the value of both land and its products.

Fourth, That, singularly enough, the effects of the two systems, according to the Hon. member, have been directly the reverse of all this; the value of cotton, of food, and of tobacco, having diminished as the market was more and more brought home to the producer, and increased as the market became more distant, and as the cost of transportation increased.

* There is another great interest—the manufacturing interest. Let me say a few words upon this subject, and I propose to say but a few. The great manufacturing interest thrives as its customers thrive, and it cannot thrive without them, nor without their prosperity. The manufacturing interest in New-England, New-York, and Pennsylvania, perishes if the West ceases to be a good purchaser. The danger to that interest is not from importations from abroad. The hopes of the manufacturing interest should not be in excluding importations from abroad. That interest in the North-east should cease to look with fear to the other side of the Atlantic; but it should begin to look with hope towards the West. That is the true doctrine for the people of any section of the country. May they learn it, and act upon it in season. Why, sir, the manufacturing interest has every thing to hope from the people of the West, who are its best customers. Look at the change that has taken place within a few years past. The President in his Message has told us that agricultural products have not risen in price, and experienced an increased demand, as was expected under the present tariff, as compared with the former. Sir, I do not know what gentlemen expected, but their expectations must have been extravagant indeed, if they have not been more than satisfied. If you take the agricultural products of this country, take the whole amount of articles exported from this country—and they are almost all agricultural—from the year 1842 to 1846, during the operation of the last tariff, and compare their export value, as stated by the shippers, with the value of the same quantities of the same articles at the prices which prevailed before 1842, and you will find the difference to be about \$125,000,000. You will find that your exports of products of all sorts brought, under the tariff of 1842, about \$125,000,000 less than the same articles would have amounted to if sold at the prices which prevailed for four years previous to 1842. There is a state of things which agricultural interests would not desire during those four years. How has it been since 1846? There has been a general rise of about the same amount; that is to say, about \$30,000,000 a year. The articles exported since 1846 down to the present time, if they had been sold at the average prices that prevailed from 1842 to 1846, would have brought nearly \$150,000,000 less than they have brought; a difference of \$30,000,000 a year as before. Under the tariff of 1842, our exports sold for \$30,000,000 a year less than the same quantities had sold for before; and under the tariff of 1846, and since that time, they have brought \$30,000,000 a year more than the same quantities had brought before.

A.

Cotton Exported, with its Value, during three Periods—from 1839 to 1842 inclusive, from 1843 to 1846 inclusive, and from 1847 to 1851 inclusive:—

Four years ending with 1842.		Four years ending with 1846.	
Quantity, - -	2,272,486,390 lbs.	Quantity, - -	2,876,394,612 lbs.
Value, - -	\$227,018,094	Value, - -	197,690,291
Price per lb., -	\$9.99-100 cts.	Price per lb., -	6.873-1000 cts.

The quantity of cotton for the latter four years, at the price of the former four years, - - - - -		9.99-100 cents.
Would have sold for - - - - -		\$287,351,822
Official return of its value, - - - - -		197,690,291

Loss on cotton by fall of prices, - - - - -	\$89,661,531
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Five years ending with 1851.	
Quantity, (pounds,) - - - - -	3,930,715,351
Value, - - - - -	\$366,111,042
Price, (per pound,) - - - - -	9.314-1000 cts.

The quantity of cotton for the latter five years was valued at - - - - -		\$366,111,042
At the price of former four years, 6.873-1000 cents, it would have brought only - - - - -		270,158,066

Gain on cotton by rise of prices, - - - - -	\$95,952,976
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B.

Loss on Fall of Prices under the Tariff of 1842, and Gain by Rise of Prices under the Tariff of 1846:—

Under tariff of 1842.	
Loss on cotton, (as per table A,) - - - - -	\$89,661,531
Loss on tobacco, - - - - -	16,786,197
Loss on vegetable food, - - - - -	8,519,803
Loss on provisions and animal products, - - - - -	4,873,108
Loss on other exports, (estimated in part,) - - - - -	7,000,000

\$126,840,639

Under tariff of 1846.	
Gain on cotton, (as per table A,) - - - - -	\$95,952,976
Gain on tobacco, - - - - -	7,482,289
Gain on vegetable food, - - - - -	25,173,392
Gain on provisions and animal products, - - - - -	8,662,264
Gain on fisheries, - - - - -	978,572
Gain on ashes, - - - - -	1,136,781
Gain on other exports, (estimated in part,) - - - - -	9,000,000

\$148,486,274

Not only have the prices risen, but the quantities also have vastly increased. The enlargement of the aggregate of a single year's business to the extent of \$200,000,000 in five years' time, is enough to satisfy reasonable expectations. Yet this amount is the subject of complaint in the Message.

	1846.	1851.
Imports, - - - - -	\$121,691,797	\$215,725,995
Exports, - - - - -	113,488,516	217,517,130
Aggregate, - - - - -	\$235,180,313	\$433,243,125

The year 1846, which I have chosen for this comparison, is the year of the largest trade under the tariff of 1842, though it is not so large by several millions as the average of the ten years preceding that tariff.

But it is said the farmers have been disappointed. Let us see with what reason :—

C.

Showing the Exports of Vegetable Food and Animal Products, from 1843 to 1850 inclusive.

	Animal.	Vegetable.	Aggregate.
1843, - - - -	\$3,963,694	\$6,955,908	\$10,919,602
1844, - - - -	6,149,379	11,239,437	17,388,816
1845, - - - -	6,206,394	9,810,508	16,016,902
1846, - - - -	7,833,864	19,329,585	27,163,449
	<u>\$24,153,331</u>	<u>\$47,335,438</u>	<u>\$71,488,669</u>
1847, - - - -	\$11,113,074	\$57,070,356	\$68,183,430
1848, - - - -	12,538,896	25,185,647	37,724,543
1849, - - - -	13,153,302	25,642,362	38,795,664
1850, - - - -	10,549,383	15,822,373	26,371,756
	<u>\$47,354,655</u>	<u>\$123,720,738</u>	<u>\$171,075,393</u>

If the statements here made represent faithfully the operations of the past fifteen years, they settle the question of protection. If they are true, then, the more distant the market, the more prosperous must be the farmer ; and the nearer the market, the lower must be the value of labor and land. Are they true ? Are they so nearly true as to have warranted the Hon. gentleman in making them ? In reply, we have to say that when, even in private life, a gentleman makes a statement, we are bound to suppose that he believes it to be "the truth, the whole truth, and nothing but the truth ;" and to say that he did otherwise, would be to say that he was not entitled to be considered a man of honor, and this, whether the departure from truth charged upon him consisted in the suppression of important facts bearing upon the question, or the production of facts that had no existence. In this case we charge both, for facts of the highest importance are suppressed, and others are asserted that are not facts. Nevertheless, we desire explicitly to disclaim the idea of charging the Hon. member with any intentional failure in veracity, for we regard him only as one of those who have been misled by the fraudulent tables systematically put forth by such papers as the *New-York Journal of Commerce* and the *Washington Union*, and can scarcely doubt that when the mist shall have been cleared from before his eyes, it will be to him a source of much mortification to recollect that he had signalized his advent to the councils of the nation by endorsing so grievous a perversion of facts as that we have here copied.

We propose now to examine these statements, with a view to show—

First, That they are not in accordance with the real facts of the case ; second, that facts of the highest importance to a correct understanding of those that are given have been throughout suppressed ; and third, that those thus suppressed are patent to the world, and that it was a failure in the duty he owed to his constituents for the Hon. member to attempt to instruct his fellow-citizens in regard to a question admitted to be of such vital importance to their material and moral interests, and to the prosperity and power of the nation, without first making himself acquainted with them.

Before doing this, we desire to call the attention of our readers to the precise view of the case that the Hon. member desires to establish, and for that purpose, give them again an extract from Mr. Walker's Report, that has once before been laid before them :—

"Experience is against the protective policy. . . . From a long peace, Europe is

becoming so densely populated that her poorer and more uncertain climate affords a less adequate supply of food from year to year for her rapidly increasing population. Under a system of low duties, and a reciprocal interchange of commodities, it will be the interest not only of Great Britain, but also of most of the Continent of Europe, to take a large supply of food from us; but by arresting this exchange of their fabrics for our products, it becomes their interest, and in fact a necessity, to look for and encourage markets elsewhere; and also, by extraordinary means and high government bounties, to drive capital into agriculture there, to supply the wants of their people, unable to purchase our products, for which we demand specie in exchange. If we receive the fabrics of Europe in exchange for our products, it will be to their interest to encourage and enlarge that commerce; and it must go on rapidly augmenting, until our country becomes the granary of Europe, and our export trade of food shall even exceed that of cotton, great as that is destined to be under a system of low duties."

"If England and America were united by absolute free trade, the reciprocal exchanges between them would soon far exceed the whole foreign commerce of both; and with reciprocal free trade with all nations, our own country, with its preëminent advantages, would measure its annual trade in imports and exports by thousands of millions of dollars."

England desires that there shall be in the world BUT ONE PURCHASER OF COTTON, that she may fix its price; and BUT ONE SELLER OF CLOTH, that she may also fix its price. The object of the tariff of 1842 was that of bringing about a competition in the *purchase* of cotton, and thus to raise its price, and a competition for the *sale* of cloth, and thus to diminish the cost to the consumer, and enable him to consume more; and such have been the results of protection in France, Belgium, Germany, and Russia, while the reverse has been the case in all the countries of the world in which, by means of the maintenance of free trade with England, the farmers have been obliged to content themselves with having but one purchaser of their products, and one seller to them of cloth and of iron. Nevertheless, the Hon. Secretary was anxious to adopt the system that had ruined Ireland and India, Turkey and Portugal. "Close," was his theory, "the domestic market, now so rapidly growing, and you will find a larger one abroad. Relinquish the absurd idea that two purchasers of cotton are better to you than one, or that you will have cloth and iron cheaper when there are two sellers than when there is only one. The more entirely you confine yourselves to agriculture, and the more complete the control of the spinners of Manchester over the prices of your products, the richer you will grow." His policy was adopted, and henceforth the exports were to increase in quantity, and their value was to increase, enabling us to buy more as we sold more; and the greater the *quantity* of commodities we sent abroad, the greater was to be the *quantity* of other commodities we were to receive in exchange. A perusal of the extract from the speech of the Hon. member above given, will show that its object is to prove that these magnificent expectations have been and are in a course of being realized, and that "not only have prices risen, but that quantities have vastly increased." If, now, it be shown that in every case within the range of his tables, increased price has been a consequence of diminished quantity sent to the markets of Europe, and that rise of price has invariably been a consequence of diminution in the quantity sent to them, it will be obvious to our readers that, in this well-combined collection of figures, there has been a suppression of facts for which its author will require to call to account those who have so egregiously imposed upon him. That such is the case, we propose now to satisfy them, commencing, as he has commenced, with

COTTON.

In the four years ending with 1842—the first period selected by the Honorable member—the cotton crops averaged one million seven hundred

thousand bales, and the export one million four hundred and fifty thousand; according nearly with the returns to the Treasury, which gave an annual average of nearly six hundred millions of pounds. In the earliest of those years, the export price was fourteen cents; but with the gradual increase in the quantity exported, consequent upon the closing of the domestic market as the strictly revenue tariff came into operation, the price fell, until, in 1841-2, it stood at *eight cents* here, while in England the average of the last year of this free trade period was little more than five pence per pound. Here, at least, we have a case in which increased quantity was *not* attended with increase of prices, although that increase of quantity was attended with the adoption of British free trade to an extent that has not since been tried, our duties having then been only twenty per cent.

In the four succeeding years, 1842-3 to 1845-6, the crops amounted to eight millions eight hundred thousand bales, giving an average of two millions two hundred thousand, or half a million more than in the previous period, from 1838 to 1842; and as our consumption was then only beginning to revive from the destructive effects of the revenue tariff, nearly the whole surplus was compelled to seek a market in England, that country upon which it is the object of the tariff of 1846 to make our farmers and planters so dependent, and with which we might, according to Mr. Walker, have so large a trade, provided only that we sent her all our cotton to be converted into cloth. How this operated in the period from 1842 to 1846, when we had large crops, shall now be shown.

The quantity of American cotton received in Great Britain in the four years from 1839 to 1842 was three millions nine hundred and sixty-eight thousand bales, giving an average of nine hundred and ninety-two thousand bales; and so feeble was the demand in that period of *British* free trade, that the average prices in the last year but little exceeded, as we have stated, five pence per pound. It was in this depressed state of the English cotton market that the tariff of 1842 came into operation.

In the four succeeding years, those of the tariff of 1842, the quantity received in the market of Great Britain was five millions and eighty thousand bales, giving an average of one million two hundred and seventy thousand bales, or *almost three hundred thousand more than the average of the free-trade period*; and the natural consequence of this was not only a fall of price, but a fall in the actual amount received for it; whereas, according to the doctrine of the Hon. member, prices should have increased.

Now, why was it that this increased quantity had to seek a market in England? Clearly because we had almost annihilated the domestic market. The domestic consumption had fallen in 1842 to two hundred and sixty-seven thousand eight hundred and fifty bales; and it required years to start again the then abandoned mills, and still more years to build new ones. By degrees the domestic demand was restored, and the consumption rose, in 1846-7, to nearly half a million, and thus largely diminished the quantity for which we needed to seek a market abroad. The average increase of growth was half a million, but the average increase of the quantity thrown on the market of England was under three hundred thousand, and to the deduction thus made was due the fact that the fall of prices was not far greater. To what was that deduction due? Was it not to the tariff of 1842, which encouraged the building of mills and furnaces, and under which our domestic production of cloth increased, *per head*, fifty per cent.; to the rapid growth of trade in the *Zollverein*, where the German farmer is *thoroughly protected* in his efforts to bring the hammer and the spindle to the side of his plough, and where, under that efficient protec-

tion, the consumption of cotton has grown in fifteen years *three hundred and fifty per cent.*, or from *forty millions* of pounds to *one hundred and forty millions*; and to the increased consumption of Russia and of Belgium, *the Paradise of protection?* Unquestionably it was. But for protection, here and elsewhere, the planter would have been ruined in the period from 1842 to 1846.

We would now beg our readers to remark the manner in which the statements of the Honorable member have been constructed for him, and then to judge for themselves what has been the object of this course of operation. In the first place, we are told that, under British free trade, increase of quantity has been attended with increase of price. Singularly enough, however, in treating of the first period, the Hon. member omits all reference to the fact that, precisely as we passed from protection towards free trade—from having two purchasers to having only one—the prices, notwithstanding the small supply, tended regularly downwards, *and had reached in 1840–2 a lower point than had ever before been known.* The tariff of 1842 found cotton at eight cents, and then large increase of quantity was attended with diminution of price, being precisely what might have been anticipated. To prove, however, the disadvantageous effects of that tariff, the Hon. member's tables suppress the fact that the crops of the previous years had been short, and then, deceived himself, he furnishes his readers with a calculation of the amount that would have been realized if the large crops of the years from 1842 to 1846 had sold at the prices that had been obtained for the short crops from 1839 to 1842, the amount being most accurately made out to have been the large sum of \$89,661,531. We would beg to suggest to him to extend his calculation a little farther, and estimate how much greater would have been the loss had the tariff of 1842 not existed, and had the total increased product, amounting in the whole to no less than two millions of bales, been required to go to England. It is really time that gentlemen who undertake to teach the world on this most important question should begin to understand that they are bound to study facts for themselves, or to see that all are furnished to them; suppression of an important fact being quite as much falsehood as is the assertion of a fact that has no existence. We repeat our disclaimer of any intention to charge the Hon. member, or any other gentleman occupying a place in the great Assembly of the nation, with deliberately and wilfully stating what he knows not to be true; but when a person whom we have a right to suppose cognizant of the facts of the case, comes forward and furnishes us with a statement from which the great fact of the enormous size of the crops of 1842–6 *is carefully excluded*—and then assures us that the low prices of that period were a consequence of the existence of the tariff of 1842, under which the domestic market for both cotton and cotton cloth so largely increased, we cannot but say that we pity him for such a manifestation of absence of all the knowledge required for the position in which he has been placed by his constituents.

We come now to the Hon. gentleman's facts in relation to the cotton trade under the tariff of 1846, as compared with that of the tariff of 1842; and it becomes now necessary to state that the Treasury returns in relation to that trade, during the administration of Mr. Walker, are not entitled to even the shadow of consideration. In the first two Reports made by that gentleman to Congress, *while the tariff of 1846 was in preparation*, the exports are *cut down* in a manner the most extraordinary, while the export for the first year of his own tariff is, on the contrary, in a similar manner expanded, as will now be shown. The actual quantity exported in 1844–5 was two millions eighty-three thou-

sand seven hundred and fifty-six bales, giving a weight of about nine hundred millions of pounds; whereas the Report, being the first issued under Mr. Walker's direction, makes the quantity only seven hundred and fifty-seven millions. In the following year, the bales exported amounted to one million six hundred and sixty-six thousand, or about seven hundred and fifty millions of pounds; whereas the Treasury Report, Mr. Walker's second, makes it only five hundred and forty-seven millions, being but nineteen millions more than the return for the following year—the first after the passage of Mr. Walker's tariff—although the quantity known to have been exported in this latter year was only one million two hundred and forty-one thousand bales, or four hundred and twenty-five thousand less than the quantity known to have been exported in the previous one.

That our readers may understand this matter fully, we give the following table, in which are shown—first, the bales actually exported, and second, the pounds exported according to the Treasury tables, converted into bales of the average weight of four hundred pounds:—

	Bales Exported.	Treasury Returns.	Latter less than truth by	Latter more than truth by
1844, - - -	1,629,000	1,659,000	....	30,000
1845, - - -	2,083,756	1,892,000	191,000	....
1846, - - -	1,666,792	1,368,890	298,000	....
1847, - - -	1,241,222	1,318,040	....	77,000
1848, - - -	1,858,261	2,356,830	....	498,000
1849, - - -	2,227,844	2,566,280	....	339,000

Under such circumstances, the Hon. gentleman must excuse us if we resort to other authority for a comparative view of the cotton trade of the four years that he has assigned to the tariff of 1842, and of those that have since elapsed.

All the cotton we raise that is not consumed among ourselves, or in the countries of Europe that afford to their farmers high protection, goes to England, and it was to promote an exchange of food and cotton for the manufactures of that country that the tariff of 1846 was passed. The trade with that country is thus the trade which *British* free-traders seek to extend, and there could exist little objection to our taking the business of that market alone; but we will first give the total exports to the world at large, as follows:—

1843,.....	2,010,137	1847,.....	1,241,222
1844,.....	1,629,490	1848,.....	1,858,261
1845,.....	2,083,756	1849,.....	2,227,844
1846,.....	1,666,792	1850,.....	1,590,155
		1851,.....	1,958,710
	7,390,175		8,876,192
Average, ...	1,847,544	Average, ...	1,775,238

We beg our readers now to turn to the Hon. gentleman's statement, that not only had the price increased, but that the quantity had also "vastly" increased, and then to judge of the reliance they may place on the assertions he has been misled to make.

In this latter period, the manufactures of Continental Europe have rapidly increased, *because of ample protection*, and have made a large market for both cotton and yarn, that has aided largely in maintaining prices; and yet, whenever the export to England of a *single year* has touched the point of the

average of the four years from 1842 to 1846, the result has been a fall of prices that is quite remarkable, as will now be shown.

The total quantity received in England in the four years from 1842 to 1846 was five millions and eighty thousand bales, giving an average for nearly the whole period of 1842, of one million two hundred and seventy thousand bales, which sold at four and three eighths to four and seven eighths pence per pound.

In 1847, the quantity was only eight hundred and seventy-four thousand bales, and the average for that and the following year was but one million one hundred and twenty-five thousand bales; yet in 1848, with a receipt of only one million three hundred and seventy-five thousand four hundred bales, the price fell to a lower point than that at which it had stood at any time during the existence of the tariff of 1842, the average having been only four pence farthing, notwithstanding the remarkably short crop of the previous year. Such having been the case, what reliance can be placed on the statement of a gentleman who couples increase of price with "vast" increase of quantity? In 1849, the quantity received was but one million four hundred and seventy-seven thousand seven hundred bales, and yet the price fell still lower, thus negating the idea that increase of price and increase of quantity go together. In 1850, the quantity received was one million one hundred and eighty-four thousand bales, and with this *diminished* quantity the price rose. The last year, with a crop less than that of 1844-5, and little more than the *average* of those of the years from 1842 to 1846, exhibits a receipt in England of one million three hundred and ninety-five thousand seven hundred bales; and the consequence is seen in the fact that, while the average receipt of the *two past years* has been no greater than the average of *the whole of the years* of the tariff of 1842, the price has here fallen to little more than thirty dollars a bale, and for the simple reason that the domestic consumption has been so far reduced by the tariff of 1846 that we have been compelled to throw on the market of England three hundred thousand bales that should have been consumed at home. Far more than that quantity would have been so consumed had the tariff of 1842 been permitted to remain in force. To its repeal, and the consequent prostration of the domestic market and destruction of *competition* for the purchase of cotton, is due the fact that it has fallen from more than fifty to little more than thirty dollars a bale, at a cost to the planters of twenty dollars a bale, making a total loss on the present crop of between *fifty and sixty millions of dollars*, with prospect of still greater loss on the next.

The Hon. gentleman favored his hearers with a calculation of how much the large crops of 1842 to 1846 would have sold for, had they realized the high prices of the short crops of the previous four years, *suppressing*, however, the fact that the latter had been short, and then charged the difference to the tariff of 1842! We would beg him now to make a calculation how much cotton would have been consumed in this country had the tariff of 1842 remained in operation, and had the mines, and mills, and furnaces continued open, and had new ones continued to be built, and see if the domestic market would not, in the period that has elapsed since the passage of the act of 1846, have absorbed far more than a million of bales in excess of what has been the actual consumption, and then to calculate what would have been the effect of the withdrawal of that quantity from the European market, with a view to satisfy himself if the price thus far paid by the cotton planter for the tariff of 1846 has not exceeded *two hundred millions of dollars*. At the close of the last year, cotton had fallen, as the London *Economist* informs us, to a point as low as, with a single exception, it had reached in ten years; but, should we now be

favoured with a series of large crops, as was the case from 1842 to 1846, what will be the price when, as a consequence of the daily diminution of our own consumption, the whole excess will require to be thrown on the market of England? It will be small comfort then to the planters, should our orator favor them with a calculation how rich they would be if, with a crop of three millions of bales, they could realize the prices of 1849-50, with a crop of two millions; and yet, should he do so, it would be scarcely more absurd than is the mass of figures he has presented us, with a view to show how large would have been the receipts of the planters if they could only, with crops averaging for a succession of years two millions two hundred thousand bales, have realized the high prices obtained in the previous years, when the average was but one million seven hundred thousand bales! Such a calculation as this should, we think, be regarded as qualifying its author to succeed to the post formerly occupied by Mr. Walker; for, absurd as were many of that gentleman's statements, we doubt if there is one of them more so than that to which we now refer, and we are quite certain that, in all his reports, there is not a single departure from that fairness which should characterize a gentleman that is more remarkable than is the total omission in this speech of all reference to the fact that the yield of cotton in 1842 to 1846 was greater by two millions of bales than that of the years from 1839 to 1842.

The object of the whole of this statement is that of showing that prices had risen, and that they had done so in the face of "a vast increase" in the quantity exported. In opposition to this, we have established—

First, That, instead of an increase in the quantity of cotton exported, there has been a decrease, although the tendency of the tariff of 1846 is that of driving all our people into agriculture.

Second, That increase of price has invariably been the accompaniment of diminution of supply.

Third, That, whenever the export of any one year has equaled the average export of the whole four years of the tariff of 1842, price has fallen, as it then fell.

Fourth, That the average export of the two past years has been ten per cent. less than that of the whole four years of the tariff of 1842, and yet that the price has fallen to the point it then reached.*

Fifth, That the reduction which has in every case followed even a slight increase of export, proves conclusively that the foreign market is incapable of extension, and that it is to the expansion of the domestic one alone that the planters can look for the maintenance of prices; and

Sixth, That a continuance of growth in that market, similar to that which took place from 1843 to 1847, would have absorbed so much of the cotton with which the market of England has since been deluged, as to have maintained the price at the highest point which it has attained at any period of short crops that we have seen in the past five years. If the Hon. member is of a contrary opinion, we beg him to examine the facts of the case, and to show us a single good reason for believing that increase in the quantity exported has ever been, or can ever be, accompanied by a rise of price; or for believing that the tariff of 1842, which caused the domestic absorption of so much of the large crops produced during the period of its existence, and which to that extent diminished the quantity pressing on the market of England, had

* "The value of cotton at the termination of the years 1849 and 1850 was respectively 30 to 40 and 50 to 80 per cent. higher than at present. Although it is now somewhat above the rates of July last, it is still moderate, having been lower but *once* [end of 1844] in ten years."—*Economist*.

any thing to do with the fall of prices that then took place ; or, finally, for believing that the tariff of 1846, which destroys domestic consumption, and forces a larger mass of cotton on the limited market of England, has had any thing to do with the rise of prices. Such are the things he has undertaken to prove by aid of a vast quantity of well-arranged figures, a portion of which we have now analyzed ; and having done so, we especially desire that he shall proceed to make his assertions good.

We beg now to call the attention of our readers to the following diagram, in which are accurately presented the opening and closing of the several periods embraced in the Honorable member's tables ; to wit—

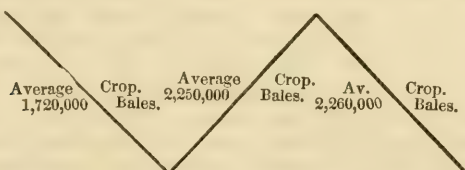
I. From 1838-9 to 1841-2, opening with protection, and ending with *British* free trade, in which the crops averaged 1,720,000 bales.

II. From 1841-2 to the date of the passage of the act of 1846.

III. From that date to the close of 1851.

1838-9—Protection.
Pop. 16 Millions.
Consumption, 276,000 bales.
DEMAND AND SUPPLY EQUAL.
Price, FOURTEEN CENTS.

Sept. 1846—High Protection
Pop. 21 Millions.
Consumption, 500,000 bales.
DEMAND OVERTAKES SUPPLY.
Price, TEN CENTS.



1841-2—British Free Trade.
Pop. 18 Millions.
Consumption, 267,000 bales.
SUPPLY EXCEEDING DEMAND.
Price, EIGHT CENTS.

1851-2—British Free Trade.
Pop. 25 Millions.
Consumption, 470,000 bales.
SUPPLY EXCEEDING DEMAND.
Price, SEVEN AND A HALF CENTS.

In the Manchester School of Political Economy, in which Mr. Walker is so distinguished a professor, it is taught that it is to the interest of the cotton planter that there should be

BUT ONE BUYER OF COTTON ;

and in the world there would be now but one, were it not for protection.

It is there also taught that it is for the interest of the purchasers of clothing and of machinery that there should be

BUT ONE SELLER OF CLOTH AND OF IRON ;

and in the world there would now be only one, were it not for protection.

Ireland, Portugal, India, Turkey, and Canada, are forced to submit to the *British* system of free trade, and the consequences are seen in the facts that they buy no cotton and consume but little cloth or iron. France, Belgium, Germany, and Russia *protect themselves against the system*, and the consequences are seen in the facts that they buy largely of cotton, and consume largely of cloth. The tariff of 1842 looked to placing ourselves side by side with the strong nations of the world—those who can and do protect themselves—and it was fast accomplishing its object. The tariff of 1846 looks to placing ourselves side by side with the weakest communities of the world—those which

cannot and do not protect themselves—and it is fast accomplishing its object, as effectually as was done by the revenue tariff of 1841–2.

Having thus disposed of the statements in relation to cotton, we now proceed to examine those in regard to TOBACCO, and doubt not to satisfy our readers that they are equally unworthy of consideration. Of the crops of 1839–42, there were exported five hundred and eighteen thousand hogsheads, giving an average of about one hundred and thirty thousand; whereas those of the four previous years had averaged only ninety-four thousand five hundred. The consequence of this excess of export was, not an increase, but a decrease of value; and, with the gradual accumulation of stock in the warehouses of England, the price fell gradually, until it reached, for the crop of 1841, sixty dollars. Commencing, in 1838, with *one hundred and twenty-four dollars* under protection, it reached *sixty dollars* under the British free-trade system in 1842. At the date of the passage of the act of 1842, *it had fallen still lower*; and now, in the three succeeding years—1843, 1844, and 1845—the yield was so great that the export reached the enormous amount of four hundred and sixty-two thousand, or an average of no less than a hundred and fifty-four thousand hogsheads; but the reader of the Honorable gentleman's speech will look to it in vain for any notice of this fact. As usual, it is *suppressed*. Instead thereof, they will find a most ingenious calculation as to how much those large crops would have yielded, had they been sold at the prices of the so much smaller crops of the previous years, the difference being charged to the account of the tariff of 1842! While thus ignoring the existence of the fact that small crops had given good prices, and had thus proved the advantage of diminishing our dependence on the English market, the Hon. gentleman assured his hearers that prices and quantities had largely increased under the tariff of 1846; and having favored them with a calculation how much the tariff of 1842 had depressed prices, causing a loss to the tobacco planters to the extent of \$16,786,197, he next proceeds to show how the tariff of 1846 had raised prices, and gives the gain to the planter from its existence at \$8,662,264. Now, mark how a plain tale shall put him down:—

The average export of 1844–5 and 6 amounted, as we have said, to the enormous quantity of 154,000 hogheads, the consequence of which was, that the average prices during that period fell to	\$52 50
In 1847, it fell to 135,000 hogheads, yet, notwithstanding this diminution, the price rose to an average of only...	53 66
In 1848, it fell further to 130,000 hogheads, and the price rose to	58 00
In 1849, it was only 101,000 hogheads, and yet the price remained at only.....	58 00
This unceasing reduction continued through a period of three years, and was attended by a diminution of stocks abroad, the consequence of which was, that in 1850, with a <i>certainty</i> that the growing crop would be very short, the price rose to.....	68 60
And in 1851, with an export of 96,000 hogheads, it again rose to.....	96 00

In 1852, at the moment at which we are writing, the price declines daily;

and it has already fallen, at the close of a period of five years,—in which the average has been only 120,000 hhds., against 154,000 for the three years which preceded the enactment of the tariff of 1846,—to little more than \$82, with every prospect of a further decline, and a certainty of larger decline should the coming crop prove equal to those of the tariff of 1842. That our readers may understand clearly how *upward movement in quantity*, such as was desired by Mr. Waiker, was attended by *downward movement in value*, and *vice versa*, we give them the following table:—

Export. Price.			Export. Price.		
1845-6,	147,998	\$57	1846-7,	Average. 127,000	Average. \$60
1844-5,	}	Av. Export, 138,000 Av. Price, \$52	1847-8,		
1843-4,			1848-9,		
1842-3,			1849-50,		
1841-2,	94,000	62	1850-51,	} 95,000	90 82
1840-1,	}	Av. Export, 126,000 Av. Price, \$80	1851-52,		
1839-40,					
1838-9,	79,000	124			

We beg our readers now to refer to the extract from the Hon. gentleman's speech, and remark the fact that he stands pledged to satisfy his hearers—

First, That with an increase of value there had been a "vast increase" in the quantity exported; and,

Second, That he had concealed the reason why the crops of 1843-46 should not have commanded as high prices as did those which had preceded them, and as have done those which have followed them.

We have fully exonerated the Hon. gentleman from any charge of intentional misstatement; but he can hardly shelter himself from a charge of being entirely destitute of the information required to fit him for the task he has undertaken, that of leader in the defense of a system which gives us *less to export* from year to year, as our population is more and more driven into agriculture, and has then to be sustained by assertions so entirely inaccurate, and calculations so absurd as those to which we have called the attention of our readers.

To what is this reduction of prices due? Is it to any increase of production in the old planting States? It is not. The *total crop* of Maryland and Virginia, Ohio, Kentucky, and the other Western States, is estimated at 154,000 hogsheads, being the precise average quantity *exported* in the three years 1843-4 to 1845-6, and yet the price tends steadily downwards. Why it does so, is easily explained. Southern policy has killed the domestic market for food, by destroying the men who were *manufacturing* it into cloth and iron. The same policy is now destroying the foreign market for it, by killing the hogs, the horses, and the cattle, who were engaged in *manufacturing* it into pork and beef, butter and cheese; and Northern farmers are now every day being more and more driven from the production of corn, that they cannot sell, to that of tobacco, which they can sell—thus, instead of being *customers* to the planters of Maryland, Virginia, and Kentucky, they are forced to become *rivals* to them. Such is the result of the policy of 1846—a policy which forbids competition for the purchase of raw produce, and places the whole body of the farmers and planters of the country in the power of a *single buyer*, tending every where to produce competition for the production of raw commodities, and thus to augment the power of that *single buyer* over themselves and the rest of the agriculturists of the world. Such is the object and such the tendency of *Manchester* free trade.

We come now to an examination of the Hon. gentleman's statements in regard to the export of food; and here the falsification is so remarkable that it is quite extraordinary that he should not himself have seen it. The fiscal year 1846 commenced running with the 1st of July, 1845, and terminated June 30, 1846. That of 1847 commenced July 1, 1846, and terminated June 30, 1847. The tariff of 1846 went into operation in December, 1846, and, of course, not until nearly half the fiscal year 1847 had elapsed. Under such circumstances, it is quite clear that, if that year does not belong to the tariff of 1842, it does not belong to that of 1847. It was, however, a great year, for it was that of famine in Europe; and, by appropriating—"the wise convey it call"—it for the use of the tariff of 1846, two things might be proved: first, that the average *quantities* had increased, and that the average *prices* had increased.

The skill with which some one has constructed these tables for the Hon. gentleman is manifested in another manner. In furnishing the cotton table, he gave us *five* years, including 1851, and he did so because it was a year in which, by a series of misrepresentations, the prices had been kept up on this side of the water to such an extent as to cause the nominal value of cotton to exceed by twenty-five millions of dollars the sum that was received for it, and by more than forty millions what will be realized this year from the same quantity. When, however, he arrives at breadstuffs and provisions, he finds "the boot on the other leg," and totally suppresses 1850-51 as unsuited to his purpose; whereas, by *conveying* 1846-47, the author of the tables finds himself enabled to present a statement like the following:—

1843-46,.....	Aggregate Exports,.....	\$71,488,669
1847-50,.....	“ “	171,075,393

Now, the most that can be claimed by the advocates of the tariff of 1846 is, that the year 1846-7 is *neutral ground*. We hold that it belongs to the tariff of 1842, and should be passed to its credit, because it was under that tariff that the productiveness of agricultural labor increased to an extent so wonderful as that to which we shall have occasion to call the attention of our readers—but, for the present, will throw it out altogether—doing which, the following is the result:—

1842-3, ...	\$10,919,602	1847-8, ...	\$37,724,643
1843-4, ...	17,388,816	1848-9, ...	38,795,664
1844-5, ...	16,016,902	1849-50, ...	26,371,756
1845-6, ...	27,163,449	1850-51, ...	21,948,653
\$71,488,769		\$124,840,616	

We beg our readers now to remark the steady *upward* movement under the tariff of 1842, and then to bear in mind that with each and every year there was a great increase in the domestic market for labor to be employed in making cloth and iron, and that the excess of labor so absorbed in 1846, as compared with 1842-3, represented more than a hundred million of dollars' worth of food and clothing, and that, notwithstanding this vast growth of the domestic market, the *power* to supply the world with both animal and vegetable food rose to a higher point than had ever before been seen. Under the tariff of 1846, we build neither mills nor furnaces, but we close old ones; and thus we drive all our vast growth of labor power into agriculture, and yet our export of food diminishes from year to year; and the amount of the present fiscal year is likely to be even below that of the years 1844 and 1845,

although, in the mean time, we have added about five millions to the population.

Having appropriated the year 1846-7 to the use of the tariff of 1846, the Hon. gentleman next takes *the famine prices* for the purpose of establishing an *average* of the *four* years 1846-50, most judiciously excluding 1850-51, when the price of wheat in England had fallen to less than a dollar a bushel; and having thus obtained an average, he furnishes his readers with an estimate of the loss on the crops of 1842-46 because of the tariff of 1842, and the gain on the following one because of the tariff of 1846! A proceeding more dishonest or more thoroughly contemptible than this, we have never known; and it is because we are unwilling to believe that any member of either House of Congress could be guilty of such misconduct, that we are so much disposed to believe that the Hon. member is not to be held responsible for it, and that he must be regarded as having been *used* by some artful outside member, who has made him the conduit by means of which this extraordinary series of mis-statements might be brought before the world. The whole table so strikingly resembles those usually published by the *Journal of Commerce*—the most active advocate of the maintenance of British power over the farmers and planters of the world—that we feel greatly disposed to believe that to that office may the paternity of this speech be attributed. If we are wrong, and if the person who delivered this speech be really the author of the tables, we should be glad to he would publicly avow himself responsible for them.

At no period since the settlement of this country has the productiveness of labor given to agriculture increased so rapidly as in the period from 1840 to 1847. In the first of these years, the total quantity of wheat, barley, rye, oats, and Indian corn, was estimated at - - 615,522,000 bushels.

Whereas, in the latter it was estimated at 867,826,000 “

Giving an increase of - - 252,304,000 bushels,
or almost *forty per cent.*; and yet in that period we doubled the production of cotton and woolen cloth, and trebled that of coal and of iron; and hence it was that the country was so rapidly restored to prosperity after the dreadful crash produced by the working of the revenue tariff of 1841-2.

It is asserted by the partisans of Britain and the advocates of *British* free trade, that we cannot make a home market for our vast product of food. Our orator, however, assures us that we did make such a market, for he asserts that we exported little food; and, as it was certainly consumed, it is quite clear that if it did not go to the foreign market, it must have been absorbed at home. It is further asserted that our exports of food tend to increase *in quantity and value*, as indeed they should do, now that no means of employment are open to our people except agriculture; but the fact is otherwise, and the Hon. gentleman has been deceived by the ingenious person who fabricated the statements he has made.

The food supplied to the world by the Union is all of it from Virginia or the States north of it, with the exception of Rice, which, as the only product of that kind furnished exclusively by the South, we now proceed to consider by itself, with a view to determine the correctness of the Hon. member's statement that prices had risen, notwithstanding a vast increase in the quantity exported.

In 1838-9, at which time the compromise had made but a small reduction in the amount of duty, the quantity exported was as follows :—

Tierces, . . . 93,320	Value, . . . \$2,460,000	Per Tierce, . . . \$24 60
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In 1841-2, when the revenue tariff had almost annihilated the manufactures of the country, it was as follows :—

Tierces, . . . 114,617	Value, . . . \$1,917,000	Per Tierce, . . . \$15 70
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Quantity had increased, but, as usual, value had fallen, and far less was now obtained for the large quantity than had before been obtained for the small one.

In the four years which followed, the crops were large, and the export averaged nearly one hundred and thirty thousand tierces ; and yet, in the year 1845, with an export in that year of one hundred and twenty-four thousand, the amount rose to \$2,564,000, and the price per tierce to \$20.60, or nearly one third more than had been obtained for the small quantity in the period of *British* free trade.

In the three years from 1847-8 to 1849-50, the average export was but one hundred and nineteen thousand tierces, and yet we find the value of that of the last of those years to have been only \$2,631,000, giving \$20.50 as the price per tierce ; and thus we have, under *British* free trade, diminution of quantity and reduction of price. In the last fiscal year, this is exhibited on a still more extraordinary scale, the export having been only one hundred and five thousand five hundred and ninety tierces, yielding \$2,170,927, or \$20.44 per tierce ; and thus we see, that while under the tariff of 1842 there was a large augmentation of export, with tendency upwards in prices, there is, under that of 1846, a steady downward tendency in both quantity and price, in direct opposition to the fraudulent statements that the Hon. member has permitted himself to be prevailed upon to endorse.

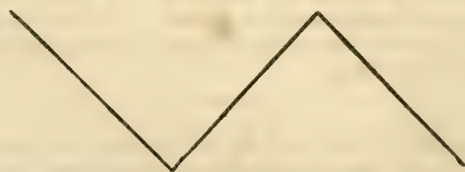
In a statement of the exports from the port of New-York in the first quarter of the present fiscal year, we find a still further difference of price and quantity, as is here shown in contrast with the last quarter of the year 1845 :

1845, . . . Tierces Exported, . . . 8,417	Value, . . . \$265,424	Per Tierce, . . . \$34 00
1851, . . . " . . . 4,425	" . . . 91,515	" . . . 20 70

With a view that our readers may understand accurately the movement of the whole period, we offer them the following diagram :—

1838-9—Protection.
Price, . . . \$24.60.

1845-6—Protection.
Export, . . 124,000. Price, . . \$20.60.



1841-2—British Free Trade. Export, . . 114,617. Price, . . \$15.70.	1849-50—British Free Trade. Export, . . 105,590. Price, . . \$20.44.
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"Prices have increased," says the Hon. member, "under free trade, notwithstanding the vast increase of quantity!"

It is certainly very remarkable that gentlemen whose position in life warrants us in expecting that they will themselves examine the statements they give to the world, should permit themselves to be *used* for giving currency to the very remarkable misstatements that so much abound in the honorable member's tables.

We proceed now to an examination of the trade in other articles of food; and as the main object of the Honorable gentleman's speech was that of showing how rapidly the trade of the West *will increase*, we deem it not amiss to commence by showing how *it has decreased* in quantity and value under the tariff of 1846—and how *it did increase* in both, under that of 1842.

The most valuable trade is that which consists in selling corn and hay *manufactured* into pork, beef, cheese, butter, lard, wool, &c.; and we shall therefore give first the movement of these various commodities in the three periods selected by the Honorable member: prior to the passage of the act of 1842, during its existence, and since its repeal.

The total quantity of "the produce of animals" received ON THE HUDSON, from all sources, in the revenue tariff period, was—

In 1840, - - - - -	31,709 tons.
" 1841, - - - - -	36,960 "
" 1842, - - - - -	37,005 "

The variation, as we see, was trifling, and the total quantity was small.

In 1843, the quantity rose to - - - - -	45,327 tons.
" 1844, " - - - - -	46,791 "
" 1845, " - - - - -	50,091 "
" 1846, " - - - - -	58,559 "

And of the crop of 1846, the quantity sent to market was—

In 1847, - - - - -	66,108 tons.
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We have here an increase of about eighty per cent. over the period of the revenue tariff of 1841–2.

In the years that have since elapsed, the following has been the amount:

1848, - - - - -	70,674 tons.
1849, - - - - -	75,699 "
1850, - - - - -	63,651 "
1851, - - - - -	54,000 "

The decline in the receipt of the most valuable of the products of agriculture seems here to have proceeded with as much regularity and steadiness as were manifested in its rise under the tariff of 1842. Already the quantity received has fallen below that of 1846, and but little exceeds that of 1845; while, from statements given below, it appears only reasonable to expect that the current year will fall below even 1843; and yet the increase in the agricultural population using this channel of trade counts by millions, and the whole commercial policy of this country is at this moment directed towards an increase in the amount of its exports to foreign countries of food and other articles of raw produce; and for the accomplishment of that object, the mines, furnaces, and factories of the country are every where being closed, in order that their occupants may be driven to agriculture.

At Cleveland, Ohio, the movement in relation to beef has been as follows:

	1850–51.	1851–52.
Number of cattle packed, - - - - -	12,700	6,500
Tierces of beef shipped, - - - - -	15,700	6,000
Barrels of beef shipped, - - - - -	15,000	2,700

We have here a diminution of above one half. In regard to hogs, the deficiency throughout the West is about one seventh, the quantity packed having been less by two hundred thousand than last year. Under these circumstances, we may, we think, be quite satisfied if the quantity of "the products of animals" sent to market this year from the West prove to be as great as it was in 1843, and if it prove to be *only one third less than it was from the last crop of the tariff of 1842*.

The decline that has been shown to have taken place in the receipts on the Hudson, great as it has been, appears to have been greatly exceeded at New-ORLEANS. We have now before us a statement of "the wonderful decrease" in the trade of that city in the last five years, from which we take the following facts:—

	1848-9.	1850-51.
Export of Pork, (barrels,) - - -	466,000	192,000
" Bacon, (hhds.,) - - -	672,000	462,000
" Lard, (kegs,) - - -	1,246,000	759,000
" Beef, (barrels,) - - -	60,000	43,000

We have here a reduction in two years of *more than forty per cent.*, and yet the population of the West must have grown in that period more than a million. Enormous as was the reduction in those years, it seems likely to be fully maintained in the present one, if we may judge from the following statement of the exports of the year commencing 1st September, 1850-51, as compared with those of the same period in the current year:—

	Beef. bbls.	Pork. bbls.	Bacon. Casks.	Lard. kegs.
1850-51, - - - -	30,606	106,084	22,620	429,505
1851-52, - - - -	25,299	88,110	20,844	383,783
Decrease, - - -	5,307	17,974	1,776	45,722

Here is an average fall of almost one sixth, following closely on the heels of a reduction in the two previous years of forty per cent., and accompanying a decline on the New-York canals that will certainly bring the receipts to forty per cent. less than the point at which it stood three years since, and below that at which it stood six years since!

Six years since, the West also exported very largely of hemp and lead, and it may interest our readers to see what was the effect of the tariff of 1842 on the power of the Mississippi Valley to pay for merchandize by aid of the food fed to growers of hemp and miners and smelters of lead, and what is now the effect of the tariff of 1846? There was exported, during the following years,

Of Hemp—Bales.		Of Lead—Pigs.	
1841-2, ...	1,211	1842, ...	473,000
1842-3, ...	14,873	1843, ...	571,000
1843-4, ...	38,042	1844, ...	639,000
1844-5, ...	46,274	1845, ...	732,000
1845-6, ...	30,980	1846, ...	785,000
1846-7, ...	60,238	1847, ...	659,000
1847-8, ...	21,584	1848, ...	606,000
1848-9, ...	34,792	1849, ...	508,000
1849-50, ...	25,116	1850, ...	400,000
1850-51, ...	19,586	1851, ...	325,000

In the half of the present year that has elapsed, hemp has remained nearly stationary, but lead has declined twenty per cent., and the export trade in that commodity appears to be coming rapidly to an end.

The smaller the number of people engaged in consuming pork and beef, while producing hemp, and wool, and lead, the smaller, as is here seen, is the quantity of pork and beef produced, and the less the quantity that can be

exported to pay for *foreign* hemp and lead, the import of which articles has thus grown:—

	Hemp. Tons.	Cordage. Tons.	Lead. Pounds.
1845-6, - - - - -	1,500	800	114
1847-8, - - - - -	1,350	1,700	324,000
1848-9, - - - - -	4,300	1,070	2,684,700
1849-50, - - - - -	4,297	1,900	36,997,751
1850-51, - - - - -	1,875	1,750	43,470,210

It will scarcely be difficult now to understand why it is that the country is so rapidly running in debt. We produce less, and are now exhausting our credit in the effort to buy that which we might produce at home; and while doing this, under the impression that we are thereby supplying ourselves in the cheapest market, we prove that it is the dearest, by the fact that, notwithstanding the great increase of population, we consume less hemp and less lead than we did five years since.

Having thus examined the trade of the West with the East, in reference to the most compact and valuable of its products, we now proceed to show what is the movement of wheat, flour, and barley, the next most valuable, as compared with Indian corn and other more bulky ones.

The receipts of vegetable food, from all sources, on the Hudson, in the revenue period of the compromise tariff, were as follow:—

	1840. Tons.	1841. Tons.	1842. Tons.
Total, - - - - -	269,000	230,000	252,000
Of which—Wheat, Flour, and Barley, - - - - -	254,000	203,000	210,000
Balance—Indian Corn, &c., - - - - -	15,000	27,000	42,000

We see thus that, while the products of animals increased slightly, wheat, flour, and barley largely decreased, and the inferior products of the farm increased largely in amount, and still more largely in proportion.

From 1843 to 1846, we find a great change in the opposite direction. The product of animals increased largely, as has been shown, and wheat, flour, and barley more than doubled, while the export of the inferior and more bulky products of the earth remained stationary, until the prospect of demand for Ireland, at the close of 1846, produced some increase, as is shown in the following table:—

	1843. Tons.	1844. Tons.	1845. Tons.	1846. Tons.
Total, - - - - -	296,000	331,000	390,000	564,000
Wheat, Flour, and Barley, - - - - -	261,000	295,000	346,000	453,000
Inferior, - - - - -	35,000	36,000	44,000	111,000

We beg the reader now to remark that the *increase* in tons of animal and of superior vegetable food, in these four years, was *more than the total quantity* of the same articles received in the last year of the revenue tariff:—

Amount of 1842, - - - - -	252,000 tons.
Amount of 1846, - - - - -	511,000 “
Increase in four years, - - - - -	259,000 tons.

Need we desire better evidence of the wonderful increase in the productive

power of the agricultural population employed in producing food during the years in which we were increasing so rapidly the production of hemp, wool, lead, iron, cloth, and coal?

Still more remarkable was the change exhibited by the crop of 1846, which came to market in 1847, during which year the continued excitement in England maintained the prices of iron and cloth, and enabled the manufacture of both to increase throughout this country with great rapidity:—

		1847.
Total,	- - - - -	826,000 tons.
Of which—Wheat, Flour, and Barley,	- - - - -	586,000 “
Inferior articles of food,		240,000 tons.

From that date, we find every thing remaining nearly stationary; and thus, precisely as we cease to raise hemp, to mine lead and coal, to smelt iron ore, and to convert wool and cotton into cloth, do we cease to produce food with which to pay for foreign iron, lead, cloth, and hemp:—

	1848.	1849.	1850.	1851.
Total, - - - - -	612,000	689,000	859,000	834,000
Of which—Wheat, Flour, and Barley,	468,000	467,000	505,000	510,000
Inferior articles, - - -	144,000	222,000	354,000	324,000

We may now advantageously compare the growth of the power of the West to maintain trade in animal food, and in the more valuable products of the field, under the tariff of 1842, with its decline under the tariff of 1846:—

	Crop 1841.	Crop 1846.	INCREASE.	Crop 1850.	DECREASE.
	Tons.	Tons.	Tons.	Tons.	Tons.
Product of Animals, ...	37,005	66,108	29,103	54,000	12,108
Wheat, Flour, and Barley,	210,000	586,000	376,000	510,000	76,000

The population embraced in the district which finds its outlet on the Hudson has grown far more rapidly in the second period than in the first, and yet the power to trade has not only not grown as rapidly, but it has absolutely and largely declined under four years of *British* free trade—the very years in which our power to export food was to grow so rapidly that it was now to count by hundreds of millions of dollars!

There has, however, been an increase. The coarser and less valuable of the products of the earth now come to market by hundreds of thousands of tons; and the last three years exhibit a receipt of these to the extent of almost nine hundred thousand tons, against one hundred and fifteen thousand tons in the years from 1843 to 1845. Instead of adding twenty-five thousand tons to the export of pork, as was done from 1843 to 1846, the people of the West now send the two hundred thousand tons of corn that would have been required to feed the hogs that would have made the pork, and they pay the freight on two hundred thousand tons when they might have paid it upon only twenty-five thousand tons. Why, our readers will ask, should they do this? In answer, we say that, when the farmer of Ohio protects the men who mine his ore and make his iron, he protects himself in raising hogs and cattle, and then he returns to the land the manure yielded by the food fed on the land; and when he closes the furnace and drives away the miners and smelters of iron ore, he ceases to *manufacture* his food into pork, and beef, and lard, and then he exports his corn, and gives his land no manure, after which he runs

away himself. In proof of this, we request the attention of the reader to the following facts:—

In 1846, the number of hogs in Ohio was 1,405,621

The growth of that year was so great, that in 1847 the number was 1,766,000, and in the following year it was 1,877,000

Being an increase of 472,000, or thirty-three per cent.

In 1850, we find them reduced to 1,529,737

And in 1851 to 1,345,814

or below the point at which it stood six years since. A similar state of things is seen in reference to cattle, which in 1850 were 1,153,517 in number, and in 1851 only 995,179; and the tendency of things being downward, we may be quite sure that the number of hogs and cattle sent to market in the next season will be greatly less than it has been in the present one; and thus it is that *British* free trade promotes agriculture. An exclusively agricultural population never to any extent *manufactures* its food into pork, beef, butter, or cheese. In order that it may do so, it must have a consuming population near at hand—the men who drive the shuttle and strike the hammer taking their places by the side of the plough and the harrow. With a view to show the difference resulting from bringing the manufacturer near to the agriculturist, in accordance with the views of Mr. Jefferson, we give the production of several articles in the three States next adjoining Canada; and to show the deleterious effect of separating the manufacturer from the agriculturist, in accordance with the views of Mr. ex-Secretary Walker, we place side by side with them Upper Canada, leaving to our readers to determine for themselves the reason why the latter is compelled to beg for the admission of her products into the Union:—

	Ohio. Pop. 1,980,408.	New-York. Pop. 3,097,000.	Vermont. Pop. 314,120.	Upper Canada. Pop. 723,000.
Butter, (pounds,)	34,180,458	82,043,823	12,128,095	3,380,406
Cheese, "	21,350,478	49,785,905	6,755,006	668,857
Wool, "	10,089,607	10,021,507	3,492,687	2,289,756

Throughout the world agriculture has become productive, and the agriculturist has become rich, as a market was more and more made on the land for the products of the land, because he was thereby enabled to enrich his land. The hog *manufactures* the corn into manure, with which to enrich the land. Kill this manufacturer of manure, and sell the corn, and the land becomes impoverished, and the State is weakened by the desertion of the land by its people.

In two years, the *increase* in the number of hogs in Ohio was four hundred and seventy-two thousand. In 1848, the *whole number* in Upper Canada was but four hundred and eighty-four thousand, and the *increase* in six years was but ninety thousand. If our readers desire to know the cause of this, we would recommend them to take up the Patent Office Report for 1847, issued during the administration of Mr. Walker, and there (p. 529) study the variety of uses to which are applied various parts of the hog that would be valueless but for the existence of consumers on or near the land, and they will then have no doubt as to the cause why a population that is divided into producers and consumers cannot only *consume more*, but have also *more to export*, than one wholly composed of producers of food. The facts here given as regards Canada speak volumes in confirmation of this:—

1850.	Imports.	Exports.
Cheese, (tons,) - - - - -	112	8
Salt Meats, (tons,) - - - - -	441	500
Lard—Value, - - - - -	£6,243	£947

Give Canada manufactures, and she will then export pork, cheese, and lard. Extinguish the manufactures of the Union, and we shall soon cease to export any of those articles.

With the decline of the home market for corn, resulting from the gradual cessation of the *manufacture* of pork, beef, butter, cheese, hemp, and lead, the *bulk* of the receipts on the Hudson increases, but the *value* per ton diminishes now, as it did in the period from 1840 to 1842, as will be seen by the following table of the quantity and value of agricultural produce received during the period embraced in the statements of the Hon. member:—

	Tons.	Total Value.	Value per Ton.
1838,.....	182,000	\$15,642,000	\$86
1839,.....	163,000	12,105,000	74
1840,.....	302,000	16,293,000	54
1841,.....	270,000	16,994,000	63
1842,.....	293,000	15,662,000	53

At this point the trade of the country was found by the tariff of 1842. For three years, the whole quantity of produce arriving at market had remained stationary, in the neighborhood of three hundred thousand tons, and the average value of the last year was the lowest of all. We now proceed to show the working of the tariff of 1842, the object of which was that of encouraging the manufacture of corn into pork, and pork into candles and soap, and iron and cloth, and the thousands of other good things required for the uses of man, as follows:—

	Tons.	Total Value.	Value per Ton.
1843,.....	346,000	\$18,211,000.	\$53
1844,.....	383,000	21,020,000	55
1845,.....	447,000	27,612,000	62
1846,.....	628,000	33,662,000	54

In this last year, the effect of bringing to market a large quantity of corn is clearly shown in the reduction of the average price. Without, however, claiming any allowance for this, we are content to exhibit the extraordinary fact that the quantity had largely increased from year to year, and that in the last it was much more than double the average of the years from 1840 to 1842, with an increase in the average value, and a large increase, if we throw out of view the additional corn sent to market in the expectation of a foreign demand.

Of the crop of 1846, sent to market in

	Tons.	Value.	Value per Ton.
1847, the quantity was....	897,000	\$54,624,000	\$60
The years which now follow are those of the tariff of 1846.			
1848, “	695,000	37,336,000	54
1849, “	769,000	38,445,000	50
1850, “	926,000	39,311,000	42
1851, “	895,000	36,357,000	40

We beg our readers now to mark the fact that the total value of the exports of the West, by way of the Hudson, is in a gradual course of decline, and that it is now only *eight per cent.* greater than it was in 1846, while it is *one third*

less than it was in 1847; and then to remark that no one year from 1838 to 1842 reached *seventeen* millions, while the average of the four succeeding years—those of the tariff of 1842—was *twenty-five* millions, and the last year was almost *thirty-four* millions; and yet the system of that day was, according to the Hon. member, the one that was to destroy trade, while that of the present day, under which trade declines from year to year, is the one that is to increase trade.

The population of the country that looks to an outlet on the Hudson might be taken in 1838, the year in which the Hon. member commences his calculations, at three millions five hundred and fifty thousand. In 1840, it was three millions eight hundred thousand; and in 1850, five millions seven hundred thousand.*

In the first seven years from 1838 to 1845—those years that immediately preceded and followed the explosion brought about by the revenue tariff of 1841—the growth of the Western States was slow. Immigration was small during nearly the whole period, for it required years for the people of Europe to learn that the tariff of 1842 had again made a demand for labor. In the following table is given the population for each successive year, the total value of produce received on the Hudson, and the value per head of the population by which it was supplied:—

	Population.	Value of Exports.	
1838,.....	3,550,000	\$15,642,000....	Per head,....\$4 39
1839,.....	3,675,000	12,105,000....	" 3 30
1840,.....	3,800,000	16,293,000....	" 4 26
1841,.....	3,950,000	16,994,000....	" 4 30
1842,.....	4,100,000	15,662,000....	" 3 80

At this point it was found by the tariff of 1842, and thereafter, for four years, the following was the movement:—

1843,.....	4,250,000	\$18,211,000....	Per head,....\$4 28
1844,.....	4,400,000	21,020,000....	" 4 80
1845,.....	4,550,000	27,612,000....	" 6 06
1846,.....	4,750,000	33,662,000....	" 7 06

The continued influence of the famine in Ireland, and great prosperity at home in all departments of employment, kept it up for the two succeeding years, in which the movement was as follows:—

1847,.....	4,950,000	\$54,624,000....	Per head,....\$11 00
1848,.....	5,200,000	37,336,000....	" 7 18

Having arrived at this point, we now find a decline, which would be still more rapid were we to take into consideration the fact that the increased facilities for communicating with the New-York Canal have caused the transfer of a large amount of trade from New-Orleans to New-York. "The North," says one of the New-Orleans papers, "has been gradually taking away from us the trade of the Mississippi Valley. . . . The annexed statement," it continues,

* These quantities are obtained by taking one third of the population of New-York, and all that of the States north and west of the Ohio. Whatever errors there may be in this balance each other, as the same system is pursued throughout.

"shows the decrease in our exports of produce for the last year, which is truly alarming:—

In 1848-9, the Exports were		In 1850-51, the Exports were	
Barrels Flour,	- - 778,000	Barrels Flour,	- - 583,000
Barrels Pork,	- - 466,000	Barrels Pork,	- - 192,000
Hhds. Bacon,	- - 672,000	Hhds. Bacon,	- - 462,000
Kegs Lard,	- - 1,246,000	Kegs Lard,	- - 739,000
Barrels Beef,	- - 60,000	Barrels Beef,	- - 43,000
Corn,	- - 1,465,000	Corn,	- - 535,000

"The whole commerce of the State has wonderfully decreased during the past five years."

Population.	Value of Exports.	
1849, ... 5,450,000	\$38,455,000	Per head, ... \$7 05
1850, ... 5,700,000	39,311,000	" 6 89
1851, ... 6,000,000	36,357,000	" 6 06

We have thus arrived at the point at which we stood six years since, when the country had just begun to recover from the disasters of the period from 1838 to 1842; and, were we to claim all the allowance that should be made for the gradual tendency of New-York to absorb the trade of Canada and of the Mississippi Valley, the amount of exports would certainly be found to be less than *five dollars* per head. If, now, to this be added the enormous diminution in the export of lead, hemp, &c., &c., by way of New-Orleans, it will be seen that the capacity of the West to pay for what it needs to purchase is diminishing at a rate that is, like the diminution of the trade of New-Orleans, only to be characterized by the expression "alarming." Wonderful as is even this decrease, it is likely to be far exceeded this year, as is seen from the following facts:—

Receipts at New-Orleans from Sept. 1.	1850-51.	1851-52.
Bacon and ham, hhds. and barrels, -	59,773	38,051
Flour, barrels, - - - -	637,753	477,914
Lard, barrels and kegs, - - - -	160,824	136,960
Pork, barrels, - - - -	182,673	130,473

To compensate for a decrease of above *fifty thousand barrels* in the quantity of pork, and *one hundred and sixty thousand* of flour received, we have an increase of one hundred and seventy thousand sacks in the supply of corn that should have been *manufactured* into manure by the hogs that have disappeared from Ohio and other parts of the West.

At the North, we have the same story—more corn and less pork and wheat—as is shown in the following extract from the *Buffalo Commercial Advertiser*:—

"There will be considerably less grain from Lake Michigan than last year, in the aggregate. There will be but a very trifle of wheat, and that very poor. We shall get double the corn from the railroad we did last year."

In another part of the same article, it is said that the quantity of provisions will be about the same as last year; but, should that prove to be the case, it will be a consequence of a still further decrease in the supplies to New-Orleans.

The facts already given will probably account for the further fact mentioned in the concluding paragraph of the Buffalo editor, which is as follows:

"Western merchants are very poor this winter; collections have been difficult to make, and the consequence will be, that few goods will come to Illinois and Wisconsin this spring."

The *Chicago Democrat* informs us that "there is no demand for land at the prices of the past season;" that the farmers are every where trying to borrow

money, and "can hardly pay the interest;" that this year "they can scarcely make their ordinary expenses balance, and have nothing to expend on lumber;" and that nothing but the negotiation of a foreign loan can avert the storm which now threatens that whole region of country.

In confirmation of this, we learn from a Wisconsin Democratic paper that

"The low price of grain, and the partial failure of crops, has thrown the State almost entirely upon the mines for cash resources, showing the important fact that Wisconsin depends almost entirely upon her mineral resources for a cash capital;" and the editor expresses the opinion, that "it would be but following the dictates of self-interest to pay a little attention to the further and more rapid development of our mineral wealth."

Unhappily, however, the policy of the country is adverse to the working of the lead mines of Illinois or Wisconsin, or the coal and iron mines of Ohio and Indiana, and the effect is seen in the fact that men are every where cutting the throats of their hogs, their cattle, and their sheep, and abandoning their lands to fly to seek elsewhere the prosperity denied them at home, as we see by the following paragraph, which is furnished by another Western journal:

"This great exodus begins to affect business seriously. Rents are falling, and labor advancing. Landlords are now looking for tenants instead of tenants for farms, as heretofore. Farms on the great Lawrenceburg bottoms, that last year were leased at a rent of four thousand five hundred bushels of corn, are this year offered for three thousand six hundred bushels; and well-stocked farms are for sale in all parts of the country, at great sacrifices, by persons who are preparing for California."

The more corn men are obliged to send abroad, the poorer they grow. The more corn that is *manufactured* into pork, beef, lard, butter, cheese, hemp, lead, iron, and cloth, the richer they grow, and they do so in full accordance with the doctrine of ADAM SMITH, who taught that the natural place for the artisan was by the side of the producer of the food and other raw materials—eating the one while fashioning the other for cheap transportation to distant markets. "England," says Mr. William Brown, a Free-trade member of the British Parliament, "is the greatest exporter of food in the world, because she passes it all through that great machine the human stomach, and thus economises transportation by sending it abroad in the forms of cloth and iron." The people of the West are now not only ceasing to pass the food through their own stomachs, that it may come out in the compact forms of lead or hemp, but they are ceasing to pass it through the stomachs of the hog or the ox, that it may come out in the somewhat compact forms of pork or beef, or through that of the sheep, that it may come out in the form of wool, the export of which from the West diminishes from year to year.

The following diagrams represent the facts to which we have desired to call the attention of our readers:—

Receipts on the Hudson.

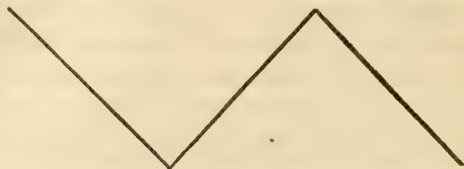
1838—Protection.	1846—Protection.
182,000 tons. Value per ton, \$86.	628,000 tons. Value per ton, \$54.



1842—British Free Trade.	1851—British Free Trade.
293,000 tons. Value per ton, \$53.	895,000 tons. Value per ton, \$40.

Receipts on the Hudson.

Value per head of 1838, . . \$4.39. Value per head of 1846, . . \$7.06.



Value per head of 1842, . . \$3.80. Value per head of 1852, . . \$5.

The supply of food to the East is rapidly diminishing, and yet the farmers of the West are every where complaining of the low price of grain. Wheat has touched a lower point in the last year than it has seen for many years, and yet we see that the quantity sent to market is far less than it was five years since. One great reason for this may be found in the fact that the policy of the government has deprived an important portion of the people of the power to earn wages, by aid of which to enable them to consume either food or clothing, while another large portion of the farmer's old customers has been driven to a part of the world in which they consume other produce than that yielded by the lands of the Mississippi Valley. Chili gains the market that Illinois and Wisconsin lose, as is seen from the following paragraph:—

“The commercial and financial affairs of Chili are at present in a very prosperous condition. Her imports for the past twelve months exceeded thirteen millions of dollars, one and a half millions of which was from the United States. *Her exports, consisting mainly of flour, wheat, barley, beans, copper, and silver, were equal to her imports.* . . . She is indebted mostly to California for this prosperous exhibit of her resources, the gold discovery there having, thus far, resulted in more general and permanent good to her citizens than any other part of the world, not only by opening an accessible market for her surplus products, but enhancing their value *an hundred-fold.*”

The policy of the last administration has given to Chili a market for her wheat and her flour, the price of which has enormously increased, and the consequence is, that she imports largely, and pays for what she imports. It has gradually closed the great domestic market for the products of the Valley of the Mississippi, and compelled it to depend upon a small and more distant one, the consequence of which is, that its *power* to furnish food to the *barren Atlantic slope, over which the future commerce of this country is to pass*, has diminished from year to year, as the policy of the nation has tended more and more to separate the plough and the hammer from the loom and the anvil; and bonds, bearing interest, are every where being issued for the difference.

What has been the course of things in other cities than New-York, for six years past, may be seen by an examination of the following table:—

Crops grown in	Barrels Flour at Boston.	Barrels Flour at Baltimore.	{ Bushels Corn	Bushels Oats at Philadelphia.	Bushels Rye }
1845, ...	743,123	850,116	2,374,484	414,417	17,160
1846, ...	1,020,497	959,416	2,560,191	533,147½	52,972½
1847, ...	909,595	736,441	3,525,404	433,293½	67,048
1848, ...	1,007,964	764,519	2,948,811½	456,771½	46,231
1849, ...	789,681	896,592	2,180,326½	247,448	44,746
1850, ...	690,520	912,498	2,158,674½	495,191	27,670

It has now been seen that the quantity of food arriving at tide-water increased with wonderful rapidity under the tariff of 1842; and, further, it

has been seen that the value per ton steadily increased. To what this increase of value was due, we propose now to inquire. The Hon. member desired his hearers to believe that with British free trade exports increased and prices improved, while with the adoption of protection the foreign trade declined and prices fell off. If so—if exports diminished in amount while receipts from the West so largely increased—it must have been because domestic consumption so largely increased. If, however, it be shown that it has been with the advance of the country towards *British* free trade that exports have diminished and prices have declined, and that it was under the tariff of 1842 that the upward progress in the amount of exports and in the prices of the commodities exported took place, what shall we then say of the statement of the Hon. gentleman, when he assured his hearers that there had been a great rise of prices, notwithstanding the “vast” increase in the quantity exported?

The following table exhibits the exports to foreign countries of food in the first and last years of the period first referred to in the Hon. member's speech, the former being a year in which protection was still high, and the latter being the last year of the strictly revenue tariff of 1841-2:—

Exports of	1838-9.		1841-2.	
	Quantity.	Value.	Quantity.	Value.
Beef and pork, tons,*	13,886	\$2,148,875	51,953	\$3,842,041
Butter and Cheese, tons,.....	471	127,550	2,250	388,185
Wheat, bushels,.....	96,325	144,191	817,958	916,616
Flour, barrels, ...	923,151	6,925,170	1,238,602	7,375,356
Corn, bushels, ...	162,306	141,095	600,308	345,150
Corn Meal, barrels, ...	165,672	658,421	209,199	617,817
Rye Meal, barrels,.....	29,458	145,448	34,190	124,396
Horses, Mules, Ship Bread, &c.,*		837,917		954,474
Total, - - - -		\$11,128,668		\$14,564,035

We find here, under *British* free trade, an increase of quantity, but it is in vain that we seek an increase of price. Beef and pork had almost quadrupled in quantity, and yet the value fell far short of having even doubled. Butter and cheese were almost five times greater, and yet their value had only trebled. Wheat had increased almost nine times, and its value but little more than six times. Flour had increased in quantity one third, and its value had remained nearly stationary. Corn had fallen from eighty cents to less than sixty cents, and the general result appears to have been, that while the quantity had increased *seventy-five per cent.*, the value had increased only *thirty per cent.*

We beg our readers now to turn to page 595, and to remark the fact that the receipts of produce on the Hudson for both 1841 and 1842 were considerably less than they had been in 1840, and yet that so small was the domestic demand that the quantity that needed to find a market in foreign countries almost fully equaled that receipt, the natural consequence of which was a great reduction of prices, as has been shown. *At this point, the tariff of 1842 found the trade in food with the foreign world,* and we have now to see the effect of large harvests, such as this country had never before witnessed. From 1840 to 1842, the receipts had been only 302,000, 270,000, and 293,000 tons. For the next four years they were 346,000, 383,000, 447,000,

* For the sake of facilitating comparison, pork, beef, hams, lard, and hides, are included under this head; and this course was indeed rendered necessary by the fact that, in several cases, the Treasury Reports do not give the separate values of the different commodities. In converting barrels, &c., into tons, the same course has been pursued in every case, and therefore, if errors exist, they balance each other.

and rising finally to 628,000 tons. How this enormous increase affected prices will be seen by an examination of the export of 1845-6, which is here placed side by side with that of 1841-2:—

Exports of	1841-2.		1845-6.	
	Quantity.	Value.	Quantity.	Value.
Beef and Pork, tons, ...	51,953	\$3,842,041	71,500	\$6,358,092
Butter and Cheese, tons, ...	2,250	388,185	6,050	1,063,087
Wheat, bushels, ...	817,958	916,616	1,613,795	1,681,975
Flour, barrels, ...	1,238,602	7,375,356	2,289,476	11,668,669
Corn, bushels, ...	600,308	345,150	1,826,068	1,186,663
Corn Meal, barrels, ...	209,199	617,817	298,790	945,081
Rye Meal, barrels, ...	34,190	124,396	38,530	138,110
Horses, Mules, Biscuits, &c.,		954,474*		1,556,781
		<u>\$14,565,037</u>		<u>\$24,598,458</u>

The export had increased seventy per cent., and this, too, under a system that was to destroy our commerce with the world. In the face of crops unexampled in the history of the country, pork and beef had risen from \$74 to \$89 per ton: butter and cheese had trebled in quantity, and risen in price from \$172 to \$175; corn had risen from fifty-seven and a half to sixty-four cents, and corn meal from \$3 to \$3.20; while wheat, which had almost doubled in quantity in this brief period, fell from \$1.12 to \$1.04; and flour from \$6 to \$5.09.

As yet, however, the country was but beginning to recover from the calamities of the period of 1841-2. It had required a long period to get into operation the old mills, furnaces, and mines, closed in 1842, and still more time was needed to bring about the state of things required to promote the building or opening of new ones; and if we desired to ascertain the real effect of the tariff of 1842, we should seek it in 1847 or even 1848, for up to this latter year the tariff of 1846 had scarcely any influence, owing to the high prices of every thing abroad, and this the Hon. gentleman should know.

Side by side with the last year of the tariff of 1842, we now place the last year of the tariff of 1846, under which the demand for food to "feed the hungry" of Europe was to rise to hundreds of millions of dollars, with great augmentation of prices:—

Export of	1845-6.		1850-51.	
	Quantity.	Value.	Quantity.	Value.
Beef and pork, tons, ...	71,500	\$6,358,092	63,350	\$6,057,973
Butter and Cheese, tons, ...	6,050	1,063,087	9,627	1,124,652
Wheat, bushels, ...	1,613,795	1,681,975	1,026,725	1,025,732
Flour, barrels, ...	2,289,476	11,668,669	2,202,335	10,524,331
Corn, bushels, ...	1,826,068	1,186,663	3,426,811	1,762,549
Corn Meal, barrels, ...	298,790	945,081	203,622	622,886
Rye Meal, barrels, ...	38,530	138,110	44,152	120,670
Horses, Mules, Biscuit, &c.,...		1,556,781		728,396
		<u>\$24,598,458</u>		<u>\$21,967,189</u>

Beef and pork have decreased in quantity, with a trivial increase of price; butter and cheese have increased *sixty* per cent. in quantity, while the total value has grown *six* per cent.; wheat has diminished in both quantity and price; flour has fallen off in quantity, and price has fallen to \$4.75. The

* Throughout these tables, we have given the whole agricultural exports of the Northern States, because of the difficulty of separating hogs from pork, cattle from beef, &c., &c. Hogs and cattle, horses and mules, are but another form in which to export corn or oats.

yet more valuable articles of export have declined more than one half; while corn—the corn *that should have been manufactured into pork*—has almost doubled, with large diminution of price; and yet the Hon. member assures the nation that prices have increased, notwithstanding “a vast increase of quantity.”

We beg our readers now to remark that the quantity of “the products of animals” received on the Hudson in 1851 was precisely the average of the years 1845 and 1846, *six years since*, and that the total receipts at New-Orleans and on the Hudson of the crop of 1845 exceeded the total receipts of the crop of 1850 at least five thousand tons, being almost the same quantity that the export of 1845–6 exceeded that of 1850–51. From this, it follows conclusively that, notwithstanding the five years’ growth of population in all the States east of the mountains, the consumption of animal food, the produce of the West, has not increased; and that, therefore, the power of the people to purchase food has diminished.

Being desirous to give our readers, as far as in our power, the latest state of the trade of the country in corn and hay, *manufactured* into pork, butter, cheese, &c., we have procured a return of the exports of New-York for the first quarter of the present fiscal year, and now give it side by side with a similar return for the closing quarter of the civil year 1845, a period long anterior to the existence of any suspicion of the occurrence of a famine in Ireland:—

	1845—Last Quarter.		1851-52—First Quarter.	
Pork and beef, tons, ...	9,165	\$679,097	4,117	\$426,096
Cheese and butter, tons, . .	2,200	333,728	485	86,432
	<u>11,365</u>	<u>\$1,012,825</u>	<u>4,602</u>	<u>\$512,528</u>

In the first period, exports were large and the product was large. In the last, the former has diminished almost sixty per cent., while the diminution of value has been only fifty per cent.; and thus, examine the matter where we may, we find that price rises with diminished export, while it falls with increased export; and therefore, that the true mode of raising the price of produce is to make a market at home. This, too, would seem to be quite in accordance with the views of the Hon. member, for he tells his hearers that the farmer must bear the cost of going to market, and it is assuredly farther for him to carry his food to Europe than to exchange it at the neighboring mill, mine, or furnace.

Such having been the state of the export trade of NEW-YORK in the most valuable of the products of agriculture—those by the production of which the land is enriched—we will give the total export of NEW-ORLEANS, from the 1st September last to the latest dates, as follows:—

	Beef. Barrels.	Pork. Barrels.	Bacon. Casks.	Lard. Kegs.
Cuba, - - - - -	15	252	581	81,654
Other foreign ports, - - -	283	3,496	45	991
	<u>298</u>	<u>3,748</u>	<u>626</u>	<u>82,645</u>

We have here an export of about eighteen hundred tons in a period of half a year, from the great outlet of the Mississippi Valley, and that under a system that was to enable us to “feed the hungry” of the hundreds of millions of the Eastern hemisphere! At the close of the fifth year of the Manchester system, whose “benign influence” was to give us by this time a trade in food

amounting to hundreds of millions of dollars, the whole trade of that great valley with the foreign world, through the outlet of New-Orleans, in the really valuable articles of export, was sufficient, *in six months*, to load *a single one of several ships recently built in New-York!* So ludicrous a failure as this is not, as we think, recorded in the annals of history.

Believing that it may interest our readers to see the present progress of the trade in another important article of food, we give from the same document the following account of the export from the port of New-Orleans:—

	Hhds.	Sugar and Molasses.	
		Barrels.	Hhds.
September to March, 1850,.....	33,520	3,628	989
“ “ 1851,.....	26,884	3,443	—
“ “ 1852,.....	21,351	1,361	134
			59,623
			47,731
			50,919

We have here a decline of about twenty-five per cent., accompanying a steady increase of population. The more corn we export, the less pork, beef, cheese, butter, hemp, lead, sugar, and molasses we make, the more rapidly we exhaust the land, impoverish the farm, and weaken the State and the nation; and yet the Hon. member assures his hearers that not only has quantity *vastly* augmented but that prices have risen, and the nation is advancing rapidly in the road to prosperity!

The object of the author of the tariff of 1846 was that of increasing our trade in food with the people of Europe. If we would consent to *receive their fabrics at low duties*, they would permit us to feed their hundreds of millions of people, and the trade with them in food would speedily exceed that in cotton, great even as that was destined to be. How wonderfully the Hon. Secretary's anticipations have been realized, the following figures will show:—

Export of Food, exclusive of Rice, to the Continent of Europe.

Wheat, - - -	\$496	Brought forward, - - -	\$5,598
Flour, - - -	4,938	Rye, Oats, &c., - - -	11,270
Indian Corn, - - -	160	Apples, - - -	175
“ Meal, - - -	4	Potatoes, - - -	51
Total, - - -			\$17,094

Such is the market afforded by Continental Europe to the whole grain-producing portion of the Union!

Having examined these figures, we beg our readers to re-peruse Mr. Walker's magnificent anticipations in regard to feeding the hungry and clothing the naked of Europe, and then to determine if the world has ever exhibited a case in which intelligent people permitted themselves to be so misled as were those of our farmers who lent their aid to the demolition of the structure raised under the tariff of 1842, which was so rapidly making a market on the land for all the products of the land. It was, however, with ENGLAND that the great market was to be made. She it was that was to supply the fabrics, and, provided we would agree that, so far as we were concerned, she should be the *sole buyer* of cotton and other raw products of the earth, and the *sole seller* of cloth and of iron, she was to purchase from us food to the extent of hundreds of millions of dollars. How far this anticipation has been realized, the following figures, exhibiting the export of bread-stuffs and provisions to Great Britain and Ireland, will show:—

Food Exported to Great Britain.		Food Exported to Great Britain.	
1845-6,.....	10,392,239	1848-9,.....	23,699,891
1846-7, (famine year),	27,843,150	1849-50,.....	12,271,063
1847-8,.....	19,538,846	1850-51,.....	8,104,253

What is now the export of pork, beef, cheese, and butter, we have already shown, and what it has been, in the last six months, of other articles of food, the following figures will show:—

	Flour. Barrels.	Corn Meal. Hhds.	Wheat. Bushels.	Corn. Bushels.
Sept., 1850, to March, 1851, . . .	790,209	2,987	787,999	375,000
Sept., 1851, to March, 1852, . . .	511,001	1,680	1,282,003	504,026

More corn and less corn meal, more wheat and less flour, more vegetable food and less of it *manufactured* into pork, beef, butter, cheese, and lard; and thus, while the manufacture of food into lead and iron is rapidly diminishing, there is a steady increase in the necessity for depending on England for the use even of machinery for the manufacture of corn into meal, and corn and meal into pork and beef. Mr. Walker assured the nation that we could not make a market at home for all the vast surplus of our products, and the remedy he has applied has consisted, not in increasing the market, but in so far diminishing the supply that it may well be doubted if, after the present year, we shall export to Europe *a single barrel* of pork, beef, butter, or cheese, although, from the diminution of the domestic demand, corn will probably be cheap enough, if the people of England will be content to substitute it for wheat. Our readers will now understand the sort of fraud—we can give it no other name—perpetrated by the fabrication of the tables used by the Hon. gentleman. The famine of 1846 raised prices throughout Europe, and its effects were felt not only in that but succeeding years. So long as they continued to be felt, our export was considerable, and all the effects of the famine were appropriated, as they now are appropriated, by the friends of the tariff of 1846; and our orator, after excluding the bad year 1850–51 because it did not suit his purposes, either in quantity or prices, furnishes an estimate of a loss of between forty and fifty millions to the farmers on the export of food, *because the tariff of 1842 was accompanied by no famine in Europe*. Tricks such as this are unworthy of a man with the slightest pretensions to statesmanship, and we are weary of exposing them, but having commenced the task, must go through to the end.

At the moment when this article is going to press, we have received the advices by the *Pacific*, and now give our agricultural readers the latest accounts, that they may see what are the markets there afforded them, even under the influence of the short crops of nearly all the Continent, and the scarcity that has since become so obvious.

“Continental rates continue altogether out of range; and so far from drawing large supplies to this country, as usual, there is every prospect of our experiencing a steady demand for wheat and flour for export to Germany; this state of things, and the encouragement given by the abolition of duties in the states of the Zollverein, have not, however, produced an immediate effect; on the contrary, the dull advices from London this morning contributed rather to increase the depression previously existing. Our market this morning was tolerably well attended, but the wheat trade opened slow, and a decline of 2d. per bushel was generally conceded, at which reduction a moderate amount of business was effected before the close. American flour was pressed for sale from the quay, and several thousand barrels changed hands at 1s. per barrel less than this day week.”—*Mackin & Co's. Circular*.

“Breadstuffs.—The continued depression in flour and wheat has made holders anxious, and a disposition is now shown to press sales. The best brands of Philadelphia and Baltimore flour find buyers with difficulty at 21s.; Western Canal and Canadian are dull at 21s. 6d.; Ohio sells in mere dribbles at 22s.; Philadelphia white wheat, ex steamer, has been sold at 6s. 4d.; and other sorts have declined in proportion.”—*McHenry's Circular*.

Such being the famine price of flour—five dollars a barrel, freight, duty,
VOL. IV.—39.

and commissions paid—it remains to be seen what will be the prices when there shall be another full crop.

From one of these circulars we take the following, in illustration of the benefits derived by agriculture from the separation of the producer and the consumer :

“The imports from Ireland consist chiefly of oats and oatmeal. . . . The Irish markets [for food for man] are now supplied in a very trifling proportion with native produce.” How, indeed, could it be otherwise? So long as agriculture was in some degree protected, the people of that country could *manufacture* their food into pork, if they could not be permitted to convert the pork into cloth or iron; and thus we see that the export of hogs from that country had grown so rapidly, that in the first *four months* of 1846 it supplied England with no less than 156,000; whereas, in the *whole* year 1849, the export was but 68,000. The hogs that were accustomed to *manufacture* manure have disappeared from the land as they are now doing from Ohio and the other Western States. The destruction of Irish agriculture has followed closely upon the destruction of Irish manufactures—and the same course of things is now to be seen on this side of the Atlantic.

“Not only,” says our orator, “have the prices grown, but there has been a vast increase of quantity.” With how much truth this was said in regard to cotton, tobacco, or the various articles of food, the reader may now determine for himself. The same assertion is made with regard to various other articles, but the only one that is so far particularized as to enable us to notice it is ASHES, a very small one it is true; but we notice it because we desire to show our readers that the parties who prepared these statements for the Hon. gentleman have carried into every portion of them the same system of fraudulent misrepresentation that has been heretofore exposed. The quantity of ashes received on the Hudson in the last twelve years has been as follows:—

1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
8,853	10,773	10,847	20,379	21,080	20,064	12,202	9,740	9,883	8,091	13,355	7,006

It is here seen that there has been “a vast increase” of quantity whenever the farmers were protected in their efforts to draw the artisan to their sides, and as extraordinary a decrease whenever protection was withdrawn and *British* free trade made the law of the land. The reader will determine for himself what reliance is to be placed on the judgment of a member of Congress who permits himself to be used to give currency to such perversions of facts. Here, as every where else, increase of price has resulted from diminution of supply, and that supply has diminished under a system that looked to converting all our population into farmers, and extending the trade in raw products to hundreds of millions of dollars, in return for which we were to receive the manufactures of England and of Europe.

Great, however, as is the diminution above exhibited, the real one must be far greater, as we have now before us, in the Trade and Navigation Reports of Canada, evidence that the value of ashes exported to this country in 1850 was \$442,000: and if this be deducted from our exports to other countries, the latter will be found to have dwindled to the miserable sum of \$207,000.

The Hon. member has furnished us with a statement of the losses to the country from the tariff of 1842, in the reduced prices at which we had been

compelled to supply the world with FISH, and the gain to the country from the tariff of 1846, under which prices have increased, notwithstanding "the vast increase of quantity;" and representing as he does a district that receives from the treasury a large bounty on fish, it might be supposed that he would have taken the trouble to make himself acquainted with the facts of the case. We regret, however, that in this instance, as in all others to which we have referred, he has failed to do so, and has permitted himself to be deceived by the fraudulent statements published in so many of the *British* free trade papers of the day, as our readers will see by an examination of the following facts:

In 1838-9, when protection still continued, and before the utter ruin which, under the revenue tariff, fell upon all the manufactures of the country, the following was the state of the trade in fish:—

Quintals exported, . . 256,000* Value, . . \$840,538 Per Quintal, . . \$3.40

In 1841-2, under the revenue tariff of that period, it was as follows:—

Quintals exported, . . 346,000 Value, . . \$730,107 Average, . . \$2.10

The quantity had thus increased nearly forty per cent., while the total value had declined about fourteen per cent., and the price per quintal had declined almost forty per cent. In this state of extreme depression, it was found by the tariff of 1842, and time was needed to bring about a balance between product and consumption, and this was being done, as is shown by the following statement of the operations of the year 1845-6:—

Quintals exported, . . 389,701 Value, . . \$930,094 Per Quintal, . . \$2.40

The quantity had grown nearly twelve per cent., and the amount received for it twenty-seven per cent., while the price per quintal had grown twelve and a half per cent.

In 1848-9, the following was the movement:—

Quintals exported, . . 248,722 Value, . . \$512,177 Per Quintal, . . \$2.06

Instead of price increasing under the tariff of 1846, with a vast increase of quantity, we have here quantity and price both diminishing, the whole amount received having been little more than the half of what was received in 1845-6, while the reduction in quantity had been little more than one third.

In the following year, 1849-50, we find a further diminution in quantity, and now the price is restored to that at which it stood in 1845-6, and this restoration is obtained at the cost of one half of the trade that was maintained in 1845-6—the period of thorough and complete protection—as is here shown:—

Quintals exported, . . 207,560 Value, . . \$456,793 Per Quintal, . . \$2.40

The following year gives a further reduction of quantity with increase of price, thus establishing the correctness of the views of those who teach that the way to obtain large prices abroad is not to increase the quantity seeking a foreign market, but to adopt that policy which tends to make a market at home, as was so rapidly being done under the tariff of 1842:—

Quintals exported, . . 195,000 Value, . . \$481,661 Per Quintal, . . \$2.46

Desirous to bring this statement down to the latest possible moment, we have procured a return of the exports of the port of New-York for the first

* To facilitate comparison, barrels and kegs are here reduced to quintals.

quarter of the present fiscal year, which is here compared with a similar return for the quarter ending December 31, 1845, a period long preceding the slightest apprehension of any deficiency in the potato crop of Ireland :—

1845,..	Quintals exported,..	15,779	Value,..	\$42,417	Per Quintal,..	\$2.70
1851,..	“	8,127	“	22,530	“	2.78

Instead of a vast increase of quantity and increase of price, we see here that it is only at the cost of nearly one half of the trade the price is being maintained. It is really to be regretted that gentlemen occupying so responsible a situation as that of a member for the enlightened State of Massachusetts should permit themselves to be deceived into the endorsement of statements so utterly fraudulent, and particularly when the interests of their own immediate constituents are so deeply involved as is the case in the present instance.

It was asserted that the tariff of 1828 tended to diminish our commerce with the world, and it was abolished to make place first for the compromise and then for the strictly revenue tariff, under which the nation was involved in bankruptcy, that led to the reestablishment of the system of 1828, under the tariff of 1842. The same assertion was then made in relation to that tariff, which was replaced by the act of 1846, under which we were to extend our commerce with all the nations of the world, and to supply them with food to the extent of hundreds of millions of dollars. How far the results obtained have corresponded with the predictions, may be judged from the following statements of the value of exports of fish, at intervals of five years, under the different systems :*

	1830.	1835.	1840.	1845.	1850.
	Tariff of 1828.	Second Year of Comp. Tariff.	Last Year of Comp. Tariff.	Tariff of '42.	Tariff of 1846.
West Indies, - - -	\$857,580	\$895,679	\$550,325	\$810,557	\$372,886
Europe, - - - - -	1,121	4,395	1,300	7,335	3,725
South America, - - -	32,810	47,609	42,176	51,289	52,774
	<u>\$891,511</u>	<u>\$947,683</u>	<u>\$593,801</u>	<u>\$869,181</u>	<u>\$429,385</u>

The direct trade with the consumers of our products thus declines with the progress of *British* free trade, as it grows with that of *American* free trade.

While the exports of American labor and American grain and pork, in the form of fish, thus decline, the imports of foreign labor and foreign grain and pork, in that form, grow as steadily, with daily increasing tendency to a transfer of the whole fishing trade to foreign shipping ; and this, too, under a system that was to give us a larger control over the navigation of the world, based as it is upon the supply of seamen furnished by the fisheries. The movement, both as regards the quantity imported and the character of the shipping, is shown in the following table :—

	1834-5.	1840-41.	1844-5.	1849-50.
American Vessels, - - -	-	\$141,273	\$87,285	\$63,927
Foreign Vessels, - - -	-	80,914	202,880	478,705
Total, - - - - -	\$42,741	\$222,187	\$290,165	\$542,632

Deducting the import from the export, we now obtain as the net export—

1834-5.	1840-41.	1844-5.	1849-50.
\$934,942	\$371,614	\$570,016	minus \$113,247

It would certainly seem that the Hon. member must have permitted himself

* For the figures which follow in relation to the fisheries, we are indebted to a valuable article in the *Merchants' Magazine* for the present month, March, 1852.

to have been most egregiously deceived by some one when he permitted himself to claim that, under the system known as *British* free trade, we either exported more in quantity or obtained a higher price for that we had to sell; for it is quite clear that we send to the world far less fish, and obtain for it lower prices than we did fourteen years since, and that while we are closing our mills, our furnaces, and our mines, and thus imposing upon ourselves a necessity for buying cloth and iron, we are from day to day more and more losing the power to pay for them in fish, as well as in all other articles of food.

Another important article of export is NAVAL STORES, which we propose to examine, with a view to show that the result is every where the same, and that, whether we examine the movement of the products of the North or the South, the East or the West, the price diminishes as quantity increases, and that the result of increased dependence on foreign markets is diminished return to the labor of our own people, followed by increased necessity for soliciting loans at the hands of the bankers of Europe.

In 1838-9—the first year of the period embraced in the Hon. gentleman's calculations—the export of naval stores amounted to

258,851 barrels. Valued at...\$688,800. Average Value,...\$2.67

In 1841-2—the last year of the revenue tariff—the quantity had increased to 330,000 barrels; but so far was this increase from being attended with corresponding increase of return, that the value was only \$743,329, an average of only..... 2.25

In 1845-6, we find that the export had risen to 417,719 barrels, being an increase in the four years of more than *twenty-five* per cent., and an increase in the return of almost *fifty per cent.*, the total value having been \$1,085,712, giving an average of..... 2.55

This would scarcely seem to bear out the Hon. gentleman's statements, but still less will it be found to be the case with the years that have followed the adoption of the policy of 1846:—

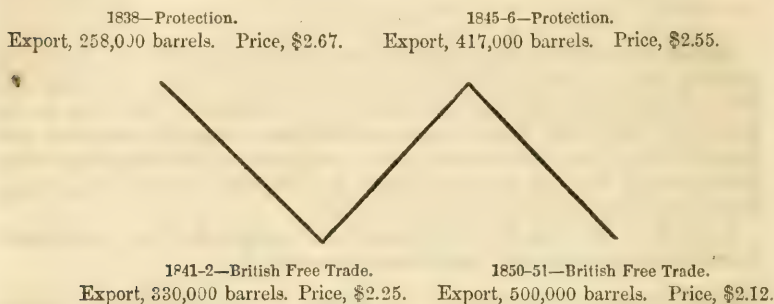
1847-8,	Export,...	385,078	Value,...	\$752,103	Av. Value,..	\$1.95
1848-9,	"	...404,809	"	... 845,164	"	.. 2.08
1849-50,	"	...531,924	"	...1,142,713	"	.. 2.15
1850-51,	"	...500,091	"	...1,063,842	"	.. 2.12

In 1845-6, we sent abroad four hundred and seventeen thousand barrels, and obtained for them \$1,085,000. In 1850-51, we increased the quantity to half a million, and obtained \$1,063,000, thus giving away eighty-three thousand barrels, and suffering a loss of \$22,000; and this under a system that was to make so great a demand for ships as could not fail to enrich the producers of all those commodities required for their construction or management!

Having given several extracts showing the present condition of things among the producers of food, we now give the following from one of the papers of the day, with a view to show what it is among the producers of naval stores and cotton:—

"Far South, customers have purchased very lightly, and the *North Carolinians* who are now buying, make small purchases, and complain of the difficulty of collecting, and dullness of trade generally; therefore we must not expect to close the season's trade as profitably as last year."

The state of things here described is easily accounted for, when we reflect that cotton now sells at little more than thirty dollars a bale, when it would be fifty dollars, had we permitted the domestic consumption to extend itself as it was extending under the tariff of 1842; and when we reflect that the manufacture of food into pork and beef, lead and hemp, coal and iron, is steadily diminishing; and when the only effect of an increase in the manufacture of food into naval stores, is attended with the results exhibited in the following diagram:



Having arrived at the close of the statements of the Hon. member for Massachusetts, we may now notice, *en passant*, those just made in the Senate by another of the advocates of that *British* free trade which looks to limiting the planter to a single market in which to sell his cotton, and a single market in which to purchase his cloth and linen. In the course of the debate on Intervention, the Hon. Mr. Soulé states, that—

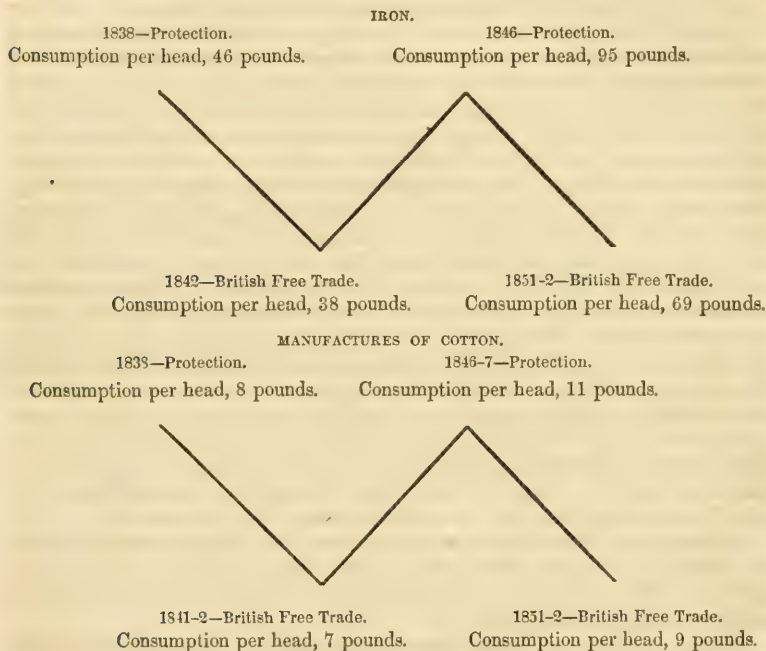
“In the year 1900, according to the same ratio of increase in exports during the last fifty years, the American exports would be \$700,000,000. These exports are the excess of our wealth.”

Having read this, we beg our readers to turn back and re-read Mr. Walker's predictions as to our capacity to supply with food the hundreds of millions of the Eastern world, and then to remark the fact, that our exports of food and cotton were, before this time, to have amounted to some three hundred millions of dollars; after which they may advantageously reëxamine the tables by which it is shown that just as we diminish the manufacture of iron, cloth, and lead, we diminish the *manufacture* of pork, beef, lard, butter, cheese, hemp, and wool, and thus diminish our *power* to maintain foreign commerce precisely as we increase our *necessity* for it. The more iron we buy abroad, the less food we have with which to pay for it. The calculation of the Hon. Senator from Louisiana would seem to be on a par, as regards probability, with those of Mr. Secretary Walker, who found the product of the nation so large that he adopted the most certain means for diminishing it; and did this under the idea that he would thereby increase the power to maintain commerce.

With the steady diminution of production throughout the West, there is a corresponding diminution in the value of land. We have now before us a statement, that a single county in Wisconsin has lost by emigration in the last three years, not less than \$650,000; and that real estate has fallen in value fifty per cent. The “benign influence” of the tariff of 1846 seems to

be tolerably equally divided among the smelters of iron, the makers of cloth, the growers of corn and cotton, and the owners of Western lands.

It will not now, we think, be difficult for our readers to understand why it is that there is a daily diminution in the consumption of cloth and of iron. They must see that it results from the fact that there is a daily diminution in the product of commodities to be given in exchange for them. The less pork, beef, lead, or hemp, that is made, the less cloth and iron can be purchased. What have been the changes in this respect, under the different systems, will be seen on an examination of the following diagrams, which represent the total consumption of iron and of cotton cloth, *domestic and foreign*, in the last fourteen years.



In 1842, the people and the banks, the States and the nation, were either bankrupt, or on the verge of bankruptcy. With the passage of the act of 1842, confidence in the future began to make its appearance, and in the brief period of four years the people were restored to prosperity, commerce grew, banks resumed payments, and States were restored to credit, while the public revenue so far increased as greatly to exceed the expenditure. So magical a resuscitation the world had never before seen; and the very idea of interfering with a system under which such results had been obtained, was calculated to strike with awe even the fiercest advocate of the system which looks to limiting the planter to one market for the sale of all his cotton, and one market for the purchase of all his cloth and iron. The poet tells us, however, that

“Fools rush in where angels feared to tread;”

and so was it here.

In saying this, we beg to disclaim the slightest intention of any disrespect

to the author of the tariff of 1846. Undoubtedly a man of ability, he had unhappily none of the knowledge required to fit him for a reformer of the commercial system of the country. His knowledge of trade and of political economy was derived exclusively from books, and our readers do not need to be told that a farmer who has no practical knowledge, and who depends entirely on books, will ruin himself, even on the best farm. To this absence of knowledge on the part of Mr. Walker are we indebted for the tariff of 1846, under which our consumption of cotton has fallen so low as to force on the European market so large a quantity as to have brought the price down to a point almost as low as has ever been known—under which the consumption of cotton and woollen cloth is daily diminishing in actual quantity, notwithstanding the rapid growth of population—under which we consume far less iron than we did four years since, notwithstanding an addition of more than three millions to our population—under which we have every year less pork and beef, butter and cheese, ashes and fish to sell, and more hemp, lead, cloth and iron to buy—under which we have issued bonds for a hundred millions, to make amends for a diminution in the productive power that now amounts to hundreds of millions annually, and by aid of which the country is now brought to the condition in which it stood in 1836, and that in which Great Britain stood in 1846, on the verge of an explosion—and yet honorable gentlemen can be found who suffer themselves to be misled into assuring the people that we not only obtain better prices for all we have to sell, but that the quantities for sale have vastly increased. The day is at hand when the destructive effects of the tariff of 1846 are to be fully experienced: and for the sake of the Honorable member's future peace of mind, we cannot but hope that he will examine carefully the statements we now place before him, and that he will then relieve himself from all responsibility by publicly acknowledging that he had been mistaken—that the tariff of 1846 was producing the worst effects that had been anticipated from it—and that he had at length become convinced that the road to perfect freedom of trade could be found only in the adoption of protection to the farmer and the planter, in their efforts to bring the loom and the anvil to take their natural places by the side of the plough and the harrow.

In our next we shall continue our examination of this remarkable speech, and trust to satisfy our readers that its author's knowledge of political economy is on a par with the accuracy of his facts. Need we say more to commend it to their careful perusal?

In the meantime, we invite their careful attention to the following brief summary of the *real facts* of the case:—

UNDER THE TARIFF OF EIGHTEEN HUNDRED AND FORTY-TWO,

we built mills and created machinery that enabled us, in less than six years from the date of its enactment, to increase the consumption of cotton from 267,000 to more than 600,000 bales; and to increase the consumption per head from seven to thirteen pounds, with every reason to expect that it would soon reach twenty pounds, to the great advantage of the producer of cotton and the consumer of cloth.

We built mills and created machinery that enabled us, in six years, to increase the domestic manufacture of woollen cloth from fifty-five to eighty-five millions of pounds.

We opened mines and built furnaces that enabled us to increase the domestic production of iron from 200,000 to more than 800,000 tons, and to increase the consumption per head from thirty-eight to ninety-eight pounds per head.

We built rolling-mills that enabled us to commence the manufacture of railroad iron, and to extend it in that brief period to almost 100,000 tons.

We increased the production of lead from 580 to 800,000 pigs; that of hemp from 14,000 to 60,000 bales; and that of wool from forty-eight to seventy millions of pounds.

The *manufacture* of corn and hay into pork and beef, butter, cheese, and lard, was extending itself at a rate unexampled in the world; and the value per ton of the exports from the West to the East was steadily advancing.

We thus made a market for more cotton, and yet had more to export; and the tariff of 1842, that found prices lower than they had ever been before, left them already advanced one fourth, with every reason to expect that they would soon be permanently fixed at a higher standard than had been known for twenty years.

We thus made a domestic market for food, to be consumed by the growers of wool and of hemp, and the producers of cloth and iron, coal and lead, to the annual extent of more than one hundred millions of dollars, and yet our exports rose from fourteen millions in 1841-2 to twenty-four millions in 1845-6.

We consumed more fish and exported more, more rice and exported more, more naval stores and exported more, and the prices of all these things rose, the tariff of 1842 leaving them all much higher than it had found them.

We produced more and consumed more of every thing; the condition of the people steadily improved; the credit of our banks and that of the State and of the general government were restored; and there was a degree of quiet prosperity such as never had before been seen in any portion of the world. *Confidence in the future prevailed throughout the whole range of society.*

UNDER THE TARIFF OF EIGHTEEN HUNDRED AND FORTY-SIX,

we have closed cotton-mills, and driven down the manufacture of cotton from 600,000 to 467,000 bales, and have, in the last three years, decreased the consumption of cloth, foreign and domestic, per head, *twenty-five* per cent.

We have closed woolen-mills, and have, in the last three years, diminished the consumption of cloth, foreign and domestic, twenty per cent.

We have closed mines and furnaces, and have diminished by fifty per cent. the production of iron; and the consumption of iron, foreign and domestic, has fallen from ninety-eight to seventy pounds per head.

We have closed rolling-mills until we have almost annihilated the manufacture of railroad iron, and destroyed the *competition for the sale* of an article so necessary for the cheap transportation to market of our products.

We have diminished the export of lead from 800,000 to 300,000 pigs; that of hemp from 60,000 to 19,000 bales; and the product of wool at least ten millions of pounds.

The manufacture of corn and hay into pork and beef, butter, cheese, and lard, declines daily, and the value of exports from the West to the East has fallen from *sixty-two dollars* per ton in 1845 to *forty dollars* per ton in 1851.

We have thus diminished the market for cotton, and have placed ourselves under the necessity for exporting more, the consequence of which is seen in the fact that it has fallen even below the price of the revenue tariff of 1840-2—then the lowest that had ever been known—with a certainty of great further decline, should the crops prove large.

We have diminished the domestic market for food to be consumed by the growers of wool and of hemp, and the producers of cloth and of iron, coal and

lead, and that diminution cannot be estimated at less than fifty millions of dollars per annum; and yet our ability to supply food to the world declines from year to year, as the *manufacture* of corn and hay into pork, beef, butter, cheese, and lard, declines, and as we become more dependent upon foreign nations for wool and hemp, lead, cloth, and iron.

The import of fish now exceeds the export, that of rice has fallen in both quantity and price, and that of naval stores has increased in quantity while it has declined in amount.

We produce less of every thing, and the consumption of all articles of necessity is gradually declining, proving a steady deterioration in the condition of our people. We are running in debt to foreign nations for articles of luxury. Speculation is every where, *and confidence is no where*; for every man feels that the events of each successive year are bringing us nearer and nearer to a convulsion similar to that which has rendered memorable the period of the revenue tariff of 1840-2.

CHEMISTRY APPLIED TO AGRICULTURE.

MESSRS. EDITORS:—In your February number, I notice the publication of an article entitled, "Chemistry applied to Agriculture." I hope you will give your readers the following comments on the doctrines there advanced, as those views, emanating from and sustained by such respectable authority, may strengthen the cause of empirical agriculture. The author asserts, that "no chemist has ever been able to ascertain what constitutes manure a fertilizing substance."

The most laborious experiments upon this subject that have ever been made, were recently published in the Journal of the Royal Agricultural Society of England. The following is the conclusion of the whole matter, *in the words* of Messrs. Laws & Gilbert: "In conclusion, then, if the mineral theory of Professor Liebig simply implied that the growing plant must have within its reach a sufficiency of the constituents of which it is to be built up, the authors fully and entirely assented to *so evident a truism*, that of the minerals, phosphoric acid is exhausted more than the alkalies."

But your author asserts, that "the sulphates, phosphates, &c., cannot be demonstrated to be fertilizing principles: not one of them will feed plants in an exhausted soil."

Baron Liebig says, (in his recent publication of May 14th, 1851, *Letters on Chemistry*, p. 481,) "Every thing, in the action of any manure, depends upon the *composition of the soil* to which it is added. To fertilize a soil for grain by means of ammonia *alone*, is like trying to rear an ox with food from which the elements of his bones and his blood are excluded. The opinion that potash, phosphoric acid, sulphuric acid, &c., constitute the food of plants, and are as essential to them as bread and meat to men, or hay and oats to horses—this opinion is not the expression of a theory, but of a natural law or universal fact." It is proven by the experiments referred to, that if a soil is exhausted of its organic matter, these *inorganic*, or earthy materials, will not supply its place, any more than bread will quench thirst, or water satisfy hunger; but no one will argue from this that bread will not feed man, as our author argues that "the above [elements of all plants] *will not feed plants!*" Your correspondent goes on to say that if it could be proven a field containing *all other* elements of a good soil did not contain one atom of phosphoric acid; and if under these circumstances it was perfectly sterile, yet the *successful* application of phosphoric acid to that field would not afford any evidence of the fertilizing power of phosphoric acid; *and that the fertility of*

any soil can be restored without the addition of any substance whatever!" Baron Liebig says, (Op. cit. 482,) "I have, for three years past, on about twelve English acres of the most barren soil, near Giessen, by the use of a mineral manure, composed on the same principles, obtained for all the crops which are cultivated in the district, results which were declared, previous to my experiments, to be impossible by all the agriculturists who knew the land."

If one single grain of wheat can be raised in pure sand, or in any soil that is *absolutely free* from phosphoric acid, "by the application of a board, or any fermenting substance," then the application of chemistry to agriculture is defeated. Again, if *any one* specimen of soil, *remarkable for its fertility*, can be obtained from any part of the world, that is entirely destitute of phosphoric acid, potash, sulphuric acid, &c., or *any one* of these; then the analysis of soils is a farce, and empiricism has triumphed. I fear that some will think that undue importance has been attached to the diagnosis and successful treatment of the soil referred to by your correspondent. Baron Liebig says, (Op. cit., p. 481,) "The negative results of experiments, made without the guidance of just principles, do not gain in value by their multiplication, and millions of them do not outweigh *one* successful experiment, if the cause of its success be recognized and ascertained." "To the united efforts of the chemists of all countries, we may confidently look for a solution for these great questions; and by the aid of enlightened agriculturists, we shall arrive at a rational system of horticulture and agriculture, applicable to every country and all kinds of soil, and which will be based upon the immutable foundation of observed facts and philosophical inductions."

With regard to the shade theory, I will venture to make a few suggestions. Every one has noticed the luxuriant growth of grass around a board or large stone. This is generally attributed to the influence of shade. I will suggest seven other modes of accounting for it.

1st. The plants growing around the board have double the supply of surface soil for their roots, as all other vegetation is excluded from the surface covered by the board.

2d. It will be noticed that the ground is always more moist under a large stone, or when covered by a board; and the grass around it is consequently supplied with moisture, when that in other situations is dried up.

3d. The temperature of the soil is preserved, as there is no loss of heat from evaporation, so that the growth of the plant is never checked.

4th. A multitude of animalculæ and insects congregate there on account of the uniform temperature, and their exhalations and exuvie supply a sort of guano, which would be distributed over a much greater surface if the board were not there.

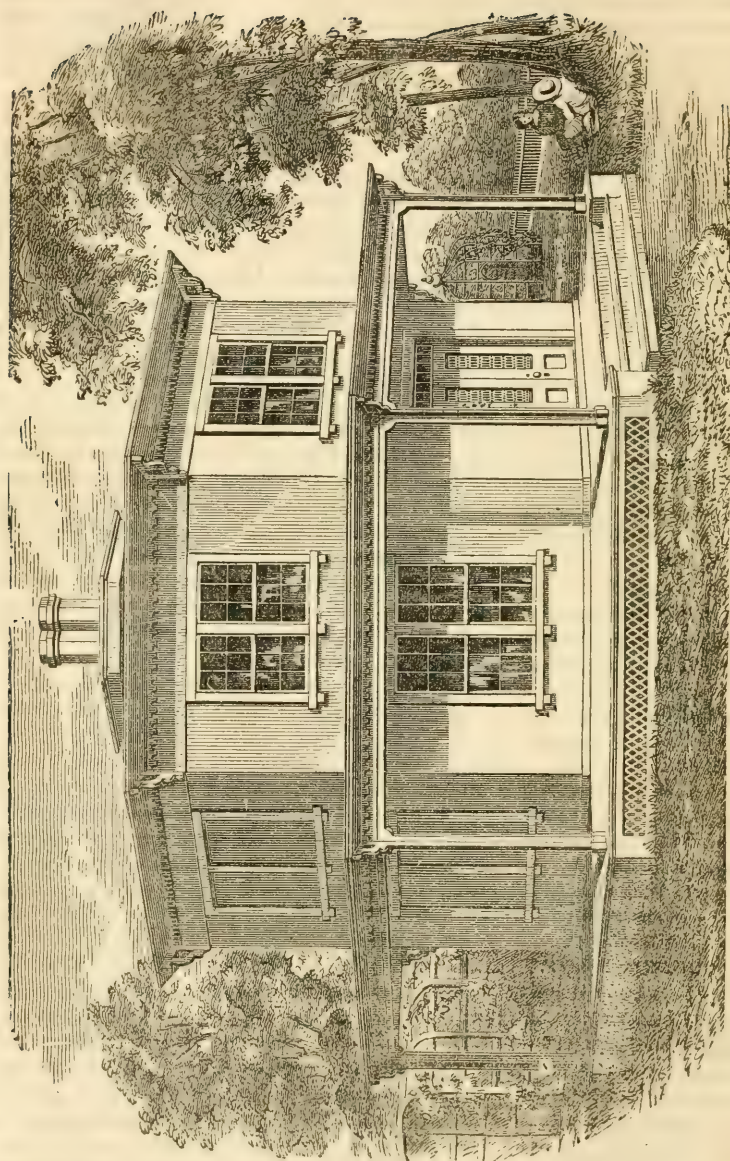
5th. The supply of carbonic acid from any organic matter (existing in the soil previous to the application of the board) is much greater and more constant, as the temperature above referred to is generally between 40° and 80°.

6th. The disintegration of the soil is promoted by moisture and the temperature referred to, and the supply of the inorganic elements is more uniform and abundant, as they are not only rendered soluble, but water is present to dissolve and convey them to the rootlets.

7th. An ingenious medical friend has suggested to me that "the electrical condition may be as much in contrast with the surrounding parts as the temperature and moisture." Moreover, every one will observe that shade, *per se*, is injurious to vegetation, and the morbid products of its influence will be avoided by all herbivorous animals.

DAVID STEWART, M.D.

Baltimore, March 11th, 1852.

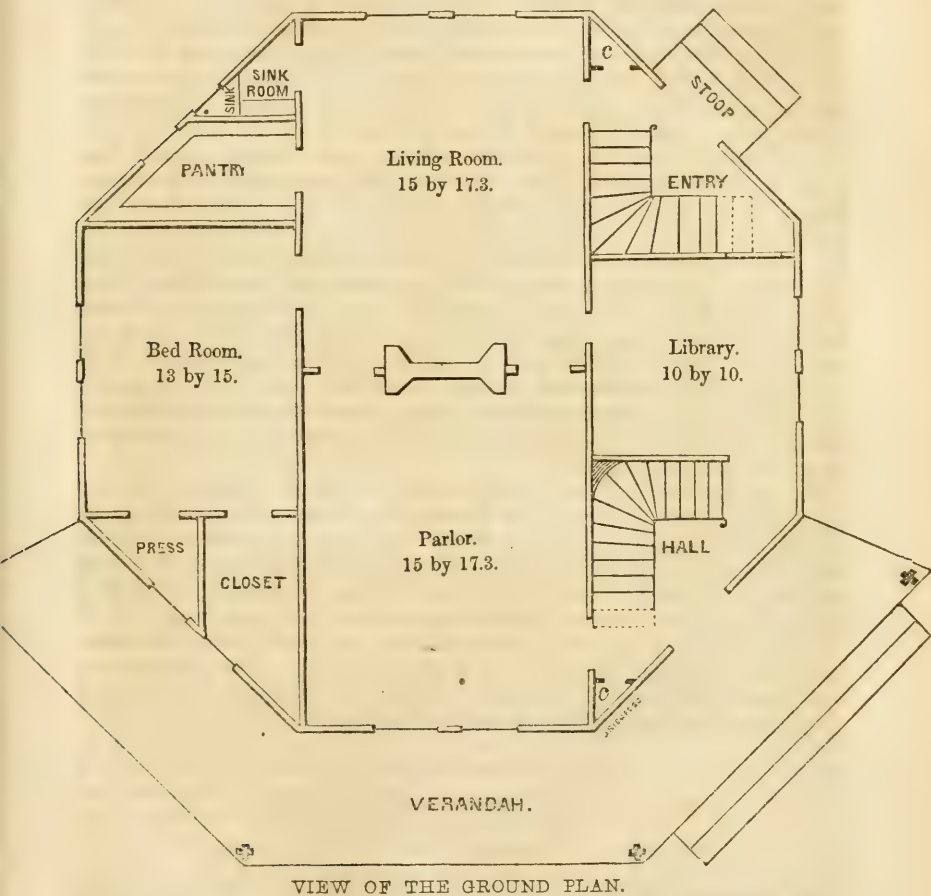


COTTAGE DESIGNS.—No. IV.

COTTAGE DESIGNS.—No. IV.

OCTAGON COTTAGE.

THE accompanying engravings represent the elevation and ground plan of an octagon cottage, which has been much admired by builders for its neatness, simplicity, convenient arrangement, and cheapness. Several gentlemen of this city and vicinity are about building after the design here specified, and, for the information of such others as may wish it, we give a brief description of the plan, together with the estimated cost of completing the same. The thing



most likely to stumble the reader, in inspecting this beautiful design, is, that so neat and well-finished a cottage can, from so good material, be constructed so cheaply. This can be explained, however, in the form of the building and the economical method of enclosing it.

The size of the cottage is 36 feet from the outside line of the building to the opposite outside line of each side. The height of the cellar is 7 feet in

clear, the first story 9 feet 6 inches, the second story 8 feet, with 2 feet breast.

The building is well framed, having sills 4×6 inches; first tier of beams, 3×9 inches; second tier, 3×8 inches; all placed 2 feet from centres, with one row of herring-bone bridging to each tier. Hip rafters, 4×7 inches; jack rafters, 3×7 inches, 2 feet from centres; perline plater, 4×10 inches; studs for the two partition walls running through the building, 3×4 inches, joist 16 inches from centres; the other studding of wall strips, 16 inches from centres; the doors being double studded.

The outside wall or enclosing is of pickets or stripes, common or refuse stuff, about 4 inches wide, constructed as follows: After the sills are placed in their proper places, and leveled, a course of pickets is nailed on to the sills, about half an inch back from the outside line of the sill; then another course on the top of that, breaking joints with the first course, and on a line with the outside face of the sill, (that is, projecting half an inch over the first course;) the third course the same as the first, and so on to the top, each course projecting over or receding from the one next below.

Roof covered with box boards laid close, joints broken; covered with single cross tin, soldered, and well painted. The windows are hung in box-frames, with double weights, cords, and pulleys. The outside doors two inches thick, four paneled each; double faced, with glass in the upper panels; the lower panels with mouldings. All the other doors, except those of the pantries, $1\frac{1}{2}$ inch thick, double-faced, four paneled, with mouldings. The pantry doors single-faced, to correspond with the room doors, the other side bead and butt. All are trimmed with neat mineral knob locks, and hung with good butts. The house has neat marble pattern mantels, good white pine plank floors, well-worked, and smoothly laid; stairs well put up, on strong carriages, moulded and returned nosings; moulded rail; fancy turned balusters; newel level rail and balusters at the top, of St. Domingo mahogany, rubbed smooth and varnished.

The cottage has a cornice entirely around it, with an observatory on the top, as seen in the elevation. The first and second stories of the building are plastered with a *scratch* coat and brown coat, down to the floors; the first story hard finished; the second skimmed for white-washing, the exterior walls requiring no lathing. The outside of the building is stuccoed in the best manner, blocked into courses, and colored in imitation of stone work.

The entire cost of such a house as is here specified will not exceed *seventeen hundred dollars*. Much more than this sum *may* be expended, it is true, if the owner is so disposed; but some builders have estimated that it might be done for even two or three hundred dollars less.

SLAKING LIME AND PREPARING MORTAR.

By SAMUEL CLEGG, JUN.

To bring caustic or quick-lime into a fit state to be mixed with other ingredients to form mortar, it must be reduced to a "hydrate," when it is called slaked lime, and the process of reducing is called "slaking." It is pretty generally admitted that the induration of mortars depends upon their absorption of carbonic acid from the atmosphere; and it seems to be essential to this reunion of carbonic acid with the lime, that the latter should have previously combined with its equivalent, or about one third of its weight, of water.

Stuccoes made with hastily prepared lime remain soft and powdery for a long period; but those prepared with well-slaked and tempered lime soon absorb carbonic acid, and become hard often to a considerable depth from the surface. The presence of water being necessary, is further confirmed by the fact, that if dry quick-lime be placed in a jar of carbonic acid, no absorption whatever takes place.

There are three methods of slaking lime, viz.: 1st, by subjecting it to the slow and continued action of the atmosphere; 2dly, by throwing over it a proper quantity of water; and, 3dly, by immersion. The first method is only suited for the fat limes, which should be broken up into pieces not larger than a walnut, or a perfect division will not be effected, and even then the centre of a lump will often remain in a caustic state. This process must not be conducted in too damp an atmosphere, and must be stopped directly the slaking is complete, by putting it into sacks or casks, and placing it in a perfectly dry place, or by covering up the slaked heap with sand, if the lime is to be used in a day or two. For plasterers' work this method is perhaps preferable to any other mode of slaking, as it makes the lime stronger, but it takes a long time in cold weather.

Quick-lime slaked by the addition of water, is the mode usually used in practice, and is at once the most certain and convenient. Rich limes subjected to this process slake with a hissing noise and the disengagement of much heat. The poorer and more valuable limes exhibit these phenomena in a less degree, and about in the proportion of the foreign matter mixed with the lime; and with some of the hydraulic limes no effect will appear to be produced by the water until some hours have elapsed. In this mode of slaking, care must be taken to throw on the necessary quantity of water *at once*; none must be added during the effervescence, or the lime will be numbed, fall to powder imperfectly, and continue gritty. Equal care must be taken not to "drown" the lime with too much water. Thus drowned, it loses the greater part of its binding qualities, and is especially the case with rich limes.

Slaking by *immersion* is accomplished by placing the lime broken into small lumps into a basket, plunging then the basket into water, withdrawing it when the surface begins to boil; the lime is then turned out into casks or heaps, and covered up, that the vapor may complete the slaking. Lime thus slaked may be kept for months, if sheltered from moisture. The rich limes, when slaked and brought to a thick pulp, give from two to three volumes for one; the weather and hydraulic limes do not give, under the same circumstances, more than from one to one and a quarter, or one and a half at most. All limes become *effete*, or difficult to slake, after having been acted on by the air. This fact is more especially remarkable in the hydraulic limes. Spontaneous extinction is suited only to fat limes. The ordinary method of slaking suits all kinds;* and slaking by immersion is suitable only for the hydraulic limes, and is the only method by which they can be kept long or much carried about, without sensible alteration.

The substances mixed with limes to form mortars are sand, ashes, and burnt clay. To enable lime to harden by the absorption of carbonic acid, it is necessary to divide it as minutely as possible, or so as to expose as much surface as possible to the action of the air. The addition of any of the above substances effects their division, and their action is simply mechanical. Sands

* Hydraulic limes are refractory in slaking. It is, therefore, the practice to break up the lumps, and to cover the heaps over with sand after the water is showered over it, by which means the heat is confined, and the process is usually complete in about eighteen hours. These limes may be slaked at once by using boiling water.

are of the greatest value, and are, with very few exceptions, the only substances specified to be mixed with lime to form ordinary mortar; sharp angular grains from quartose, granitic, or schistose* rocks are the best of these. Mortar may be likened to minute rubble masonry, the grains of sand forming the stones, and the lime the cement. The grains must be in close contact, and consequently must present only flat surfaces, and not rounded ones, (for a rubble wall of boulders would have no solidity;) in other words, the sand must be *sharp*. A mixture of coarse and moderately fine sand is advisable, as the finer grains assist in filling up the interstices between the coarser, which otherwise would be filled up with lime. Equally important is it that the sand should be *clean*, that is, unmixed with clay, animal or vegetable matter; and when rubbed between the fingers, it should not soil them, which is a good test. If the sand be otherwise good, this hurtful dirt may be removed by washing; by placing the sand in a shallow tank or tub with a double bottom, the upper end being pierced with holes, and forcing water by means of a pump through the sand, until it runs over the top colorless. Road-drift, in England, or the powdery matter scraped off the surface of roads, is often used by small builders to mix with the lime. When washed and obtained from flint, it is frequently pretty sharp, and may be used for light works; but unwashed, as it is too often employed, it is quite worthless; indeed, mud would be quite as efficacious as many specimens of matter called mortar, used by the class of men alluded to. Sea-sand, before being used in the construction of houses, should be got in large quantities beforehand, and spread out in beds of ten or twelve inches deep, and left to be well washed by the rain, or by fresh water thrown upon them, or by the method described for road-drift. The presence of saline matter causes mortar to absorb moisture at any time from a damp atmosphere, and to throw out a humidity to the surface of the walls. In hydraulic works, sea-sand need not be washed, as the salt does not appear to be injurious to mortar. Pit and other land sands, plentifully spread over the surface, or at a little depth, are generally very excellent; the only care necessary in their selection is, that they must be *sharp* and *clean*.

If cinders, scorie, burned clay, or such porous substances, be employed, the lime transfers itself into their pores, and produces a more intimate cohesion. These are, therefore, very useful inert substances to mix with lime. They must, however, be very pure and dry, and rendered pretty fine by grinding. In the case of burnt clay, or brick or tile-dust, they must be thoroughly burnt, and free from vitreous particles; burnt clay and cinders from a smith's forge give to mortar slightly hydraulic properties.

The purest limes require the greatest proportion of sand, and those which contain foreign matter, require less almost in proportion to the extent of impurity. Sir Charles Pasley says, "I have ascertained, by repeated experiments, that one cubic foot of well-burned chalk lime, fresh from the kiln, weighing 35 lbs., when well mixed with $3\frac{1}{2}$ cubic feet of good river-sand, and about $1\frac{1}{2}$ cubic foot of water, produced about $3\frac{1}{4}$ cubic feet of as good mortar as this kind of lime is capable of forming. A smaller proportion of sand, such as two parts to one of lime, is, however, often used, which the workmen generally prefer, (although it does not make, by any means, such good mortar,)

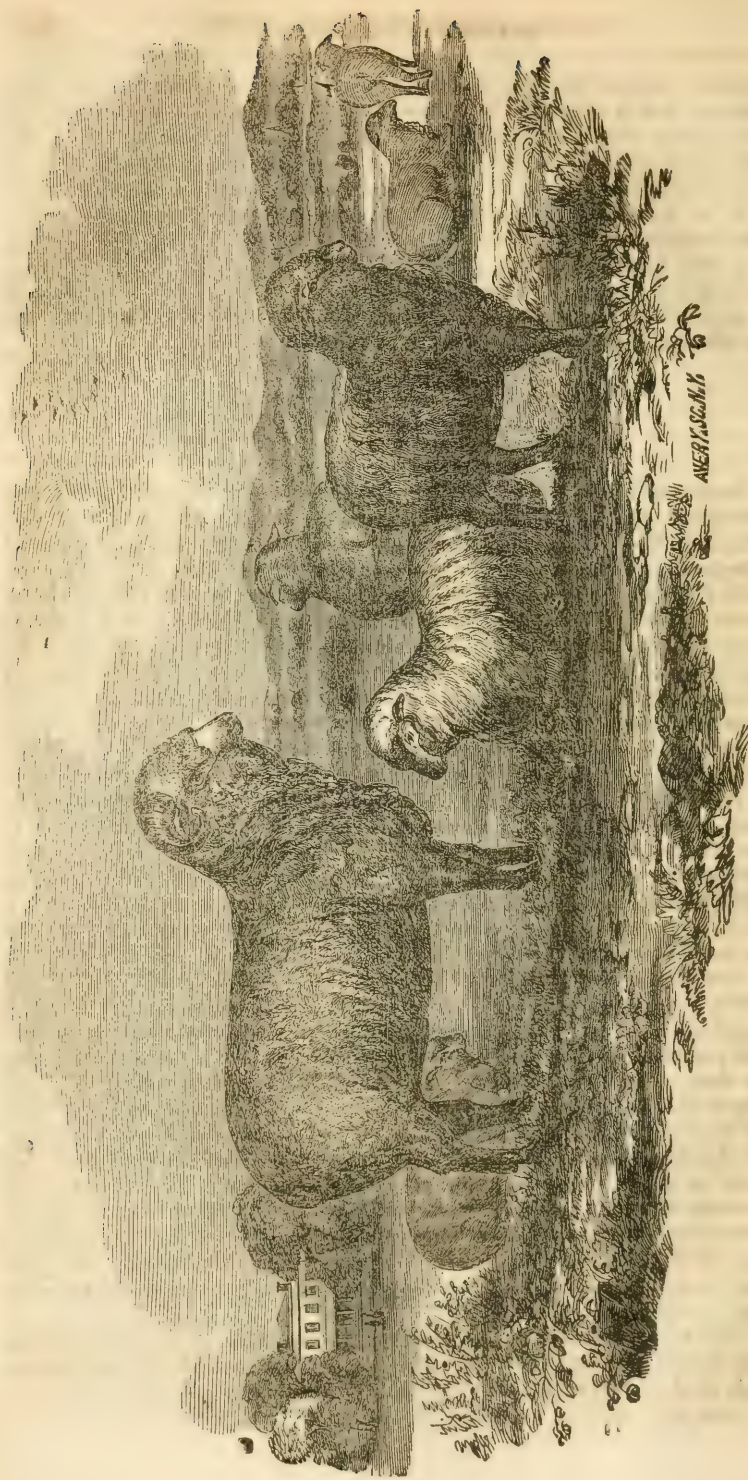
* Schist is often used as synonymous with slate, but it may be very useful to distinguish schistose and a slaty structure. The hypogene or primary *schists*, as they are called, such as gneiss, mica schist, and others, cannot be split into an indefinite number of parallel laminae, like rocks which have a true slaty cleavage. The uneven schistose layers of mica schist and gneiss are probably layers of deposition, which have assumed a crystalline texture.—*Lyell's "Principles of Geology."*

because it requires less time and labor in mixing, which seems trouble to the laborers; and it also suits the convenience of the masons and bricklayers better, being what is termed *tougher*, that is, more easily worked. If, on the other hand, the sand be increased to more than the above proportion of $3\frac{1}{2}$, it renders the mortar *too short*, that is, not plastic enough for use, and causes it to be too friable, for excess of sand prevents mortar from setting into a compact adhesive mass. In short, there is a certain just proportion between these two ingredients which produces the best mortar, which, I should say, ought not to be less than three or more than three and a half parts of sand to one of lime; that is, when common chalk lime or other pure limes are used, for different limes require different proportions."

FORSYTHIA VIRIDISSIMA.

THIS very beautiful shrub, which, with the handsome Weigelia Rosea, was introduced by Mr. Fortune from China, proves to be perfectly hardy in this latitude. We condense from a late number of the *Horticultural Journal* (England) some observations on this plant, by J. Saul, Esq., of Washington, D. C.: "When Mr. Fortune introduced it to the garden of the Horticultural Society from China, he spoke in high terms of its beauty; and I question much whether any thing more handsome can be found among all his introductions, not excepting even the lovely Weigelia Rosea. It has qualities which the latter does not possess, and which must ever render it one of the most valuable of hardy plants. From specimens which I had an opportunity of inspecting in England, I entertained a doubtful opinion of its merits. What was my surprise last March, however, when I beheld a magnificent bush of it in the nursery of A. Saul & Co., Newburg, N. Y., covered with myriads of its deep yellow blossoms. The nursery in question is situated in the highlands of the Hudson, with that noble river flowing by their base, and open to a cold breeze from the north, especially in winter, during which time the constitutional hardness of plants can be well tested. The soil in which it grows is a gravelly loam; the plant is about five feet high, very bushy, and it appears to have been planted two or three years. During the summer of 1850, it made shoots from three to four feet long, which, though strong and green, were well ripened in the autumn. About the middle of March it commences opening its blooms, which had been thickly set over the wood of the previous year, and by the end of the same month it is one complete mass of deep yellow. The *Gardener's Magazine of Botany* says: 'Unfortunately the flowers are too delicate in texture to bear exposure to rough wind, as they are readily bruised, and soon show the effects of rough treatment.' So far from this being correct, I know of no plant whose blooms will bear an equal amount of rough treatment uninjured. The subject of my remarks here was fully six weeks in bloom, during which time it encountered one or two falls of snow and much wet weather, yet the blooms did not appear discolored in the least, up to the time they dropped off. The plant was in an open and exposed situation. It will be found very useful for winter and spring forcing."

We hope soon to see these beautiful shrubs adorning our homesteads, as we understand the Messrs. Saul, and most of our nurserymen, have them on sale at about fifty cents each.



IMPROVED SPANISH MERINO SHEEP.

IMPROVED SPANISH MERINO SHEEP.

WE print on the preceding page a spirited engraving representing the Improved Spanish Merino Sheep, recently imported by S. W. Jewett, Esq., of Weymouth, Vt., and now in the possession of Messrs. H. S. Morse and O. F. Holabird, where they justly excite the admiration of all who behold them. Mr. Jewett is well known as one of our largest importers of improved stock, and is now on his way to the Continent for the purpose of attending to the shipment of about \$15,000 worth of his last year's purchase, which we trust will prove a profitable investment for him, as we hope it will be a very important one for the friends of improvement in sheep breeding throughout the country.

In regard to the improved sheep of Mr. Jewett's importation, a friend, who has had every opportunity for observing them, remarks:

"We wish those of our readers who have any taste for fine animals could visit the establishments of our friends, H. S. Morse, Esq., and O. F. Holabird, Esq., at Shelburne, and look at the flocks of the new sheep recently imported from France. It is difficult to make those who have not seen them understand the immense disparity between them and the ordinary sheep. We had a chance to compare the two breeds, in a shed where the common sheep and the French ones occupied two divisions in sight of each other. The natives made a sorry show indeed. They looked as if they had pastured on a desert, and eaten thistles in winter, although they had had exactly the same care and feed as the foreigners. The *lambs* of the French breed, three months old, are just about as large and heavy as a full-grown common sheep; and then the wool—it needs to be seen and felt in order to be appreciated. They are mostly covered thick with it, above and below, from the hoofs to the tip of the nose. There is no waste room on them; and as one stands looking at them, it seems by no means extravagant to suppose they can bear the enormous fleeces that are attributed to them. Those we saw at Mr. Morse's have had no feed except grass and hay since their importation in August, and yet they are in better condition than any common sheep we ever saw at this season. They are moreover extremely prolific, and seem to bear this climate as well as the natives.

"We know very well that the truth with regard to these sheep is so astonishing as to raise doubts among those who know nothing of them; but we feel sure that a visit to them will remove all the doubts of the most skeptical. After looking over the flocks, and comparing their stalwart lambs with the full-grown sheep of the common kind, we are convinced that the general introduction of the new breed in this country will work a perfect revolution in the wool-growing business, and improve the quality of the mutton out of all proportion to the increase of trouble and expense. Nor did we wonder that the proprietors had refused what sounds like the extravagant price of \$550 for their best stock sheep. The result of the enterprise, whether as respects the value of the importation or the success of the importers, is now no longer problematical. The demand for the sheep is steadily increasing, and already exceeds the supply.

CLOSE OF THE HUDSON.—The Hudson river has been closed the present season 102 days, being twelve days more than the average of the 70 years from 1782 to 1852. The longest time of suspension of navigation on record is 136 days, in 1842-3—the shortest in 1805-6, 42 days.

CULTIVATION OF THE TEA PLANT.

To the Editors of the Plough, the Loom, and the Anvil:

THE introduction and establishment of the tea plant in this country has been attended with far greater difficulties than I had anticipated, although was quite aware that there was not a single person in China or India of the slightest experience in the business of shipping tea plants and tea nuts from those parts, and cultivating them in this soil and climate. The practice pursued in China and India is all well there, but no sufficient and safe guide here.

We have mountains and valleys, rivers and streams in all their varieties; a soil adapted to the growth of every species of plant; a climate rich in its vegetative power, all our own, and must have a system of cultivation of our own, differing materially from all other nations, and substantially independent. We may draw from others lessons of instruction by careful discrimination, but cannot safely and judiciously follow their example. That, so far as regards the cultivation of tea, would be more likely to lead to error than to improvement. Standing upon our own basis, we shall, I trust, gradually build up a system of cultivation compatible with our great interests and the best good of our country.

We need no catechizing by the conceited wisdom of light-footed masters from abroad, or opinionated craftiness of residents at home. We have a practical lesson to learn, and must be our own teachers. None but an American can understand and appreciate our position in all its gatherings. Others may fancy and tug at the oar, but the beginning and the end will correspond. Our business lies at home, and if we had occasion for the services of the Japanese, or Chinese, or Indians, we can always have as many as we choose to employ. I have had applications for tea employment from all these quarters, but have invariably declined the aid. I do not choose to have my business marred by those that I know must bring their own fixed habits and prejudices with them, and who, at the same time, are entirely unacquainted with the affairs, agricultural pursuits, and modes of cultivation in this country. Nor should I select a person vain enough to think he knows every thing, and can turn his hand to the loom, the plough, the anvil, the tea plant, and every other thing, with equal facility. These are not the characters for patient, persevering labor in any thing. The world is wide enough and protective enough for all its inhabitants, and men of common genius can sustain themselves by their own industry, provided they do not covet and seek to monopolize the whole circle of the arts and sciences. In such case, they generally drop through.

When I commenced the tea cultivation in 1848, I received thirteen cases of tea nuts, and two of tea plants, from China and India, packed in four different ways. By the time they arrived in New-York, I lost every tea plant and every tea nut. Not one remained in a living condition. I do not apprehend that this severe loss arose from any original defect in the plant or nuts, but solely from the want of experience in packing for this distant market. There was not a man to be found in China or India who understood the business. The reason is obvious; no such thing had been done, and the most skilful at home was no better than the most ignorant, when he came to guess his method for shipment abroad. This disastrous commencement threw me upon my mettle; and by diligent study into the physiology of the tea plants and nuts, I devised a plan of shipping tea nuts which proved entirely successful the following year, and all arrived in Greenville in the most perfect condition. Never, I believe, were finer tea nuts seen than those received this

season, of last growth and latest importation, a part of which I am now holding for spring planting: the others were planted in October. I hope and believe that I have surmounted the most formidable obstacles with which I had to contend.

The climate and the soil here seem well adapted to the growth of the tea plant, and when once well rooted, it grows with great beauty and luxuriance. The excessive and long-continued drought of the past summer was detrimental and often fatal to the germination of tea nuts. I take blame to myself in not being fully prepared for suitable irrigation, adapted to so peculiar a season. But it is a simple branch of experience and industry, not difficult, but necessary to guard against.

My tea plants, old and young, have sustained the severity of the winter with veteran hardihood. I do not perceive the loss of a single plant. Indeed, the drought and heat of summer are far more likely to injure and even destroy a plant, than any frost we have in this part of the country. A constant watchful care is requisite for all young tea plants. The old ones will stand equally firm against the storms and frosts of winter and the heat of summer. From losses sustained, the general cultivation has been checked in its advance, but perhaps may ultimately be of advantage by more abundantly producing our own seed from a smaller number of well-grown, thrifty plants. With this view, I am husbanding my older plants with all possible attention, and look forward to an early gathering of a few nuts of my own growing. We cannot so well depend upon foreign nuts as upon those of domestic growth. Time is required to mature the plant, before we can expect the seed.

We must patiently wait. It is the duty of man to plant and sow, God's prerogative to give or withhold the increase. All experience teaches that undeviating industry, directed to a single point, seldom fails to reach it, although not in the power of man to say when. JUNIUS SMITH, LL.D.

Greenville, S. C.

THE WHITE NATIVE GRAPE.

To the Editors of the Plough, the Loom, and the Anvil:

You ask for some information relative to a white native grape, cultivated by me. I will give you, as briefly as I can, the history of it.

The banks of the Pawtuckaway (a small branch of the Lamprey river,) abound with the wild grape, so that in the space of two miles you may meet with twenty different kinds, all of which have originated from seeds, and from one of which this vine probably originated. The old vine appears to be sixty or seventy years old; it stands in a cold, rocky, uncultivated spot, and climbs some large maples, flourishing without cultivation. I have known it for eighteen years, and never but what it has borne some every year. The fruit is from one third to double the size of the Isabella with us; it is rather of a drab color, but when very ripe of a reddish cast, quite sweet, and with a very high aroma. I have never known it mildew, which most of the white varieties here are apt to do. The fruit is much larger on the cultivated than on the old stock, but it does not get its full flavor till the vines have borne two or three years, or till the roots get strong. It is perfectly hardy in our climate, and usually stops growing about the first of September. The fruit ripens about the middle of the month in common seasons, and will keep for some time. It is a good bearer: a neighbor has a vine about ten years old, (a layer from the old vine,) which for the last two years has borne more than three bushels each year of very fine fruit. When planted on the south side of a building, it frequently ripens a week earlier. They are now

scattered through the whole of New-England, and one lot in New-York. About two years ago, I planted some small vines on a high, dry knoll in the open field, to test their growing on high, dry ground, and I have never seen any grow better. Whenever I have sent the fruit as a specimen, it has invariably given perfect satisfaction; and should it prove adapted to the wants of the people, I shall feel myself richly rewarded for my trouble.

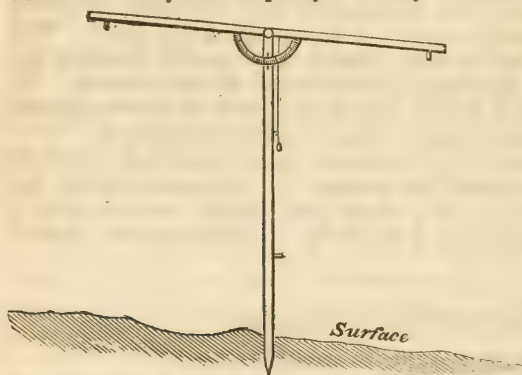
Epping, N. H.

D. L. HARVEY.

We have been hoping for some time to find a native white grape that should vie with the Isabella or Catawba, but all that we have as yet met with have been so strongly impregnated with the Fox flavor as to entirely unfit them for table fruit. We hope the above is an exception; and, as we never like to "give up the ship," will endeavor to give it a fair trial.—*Editors.*

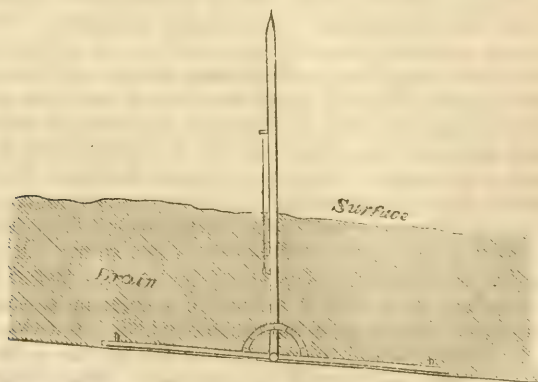
D R A I N L E V E L .

WE present our readers with the following sketch of a "*Drain Level*," which for efficacy and simplicity is worthy the attention of drainers generally.



The implement consists of an upright leg, a cross piece connected to the upright at its centre, a screw-joint, a vernier-scale, fixed to the cross piece and running in a slide on the upright, a sight attached to each extremity of and under the cross piece, and a plumb-line.

The instrument should be stuck in the ground, and a stick of the same height placed where the drain is required; the two sights should be brought to bear on the top of the stick, and the instrument locked in that position by the screw-joint; the scale would mark the inches of fall per yard.



By reversing the instrument, still locked, the workmen could use it in the

bottom of the drain. When not in use, the cross piece could be detached, and the whole carried about as easily as a shovel or other working tool.

TOBACCO CULTURE.—CUTTING AND CURING.

In our February number we gave some statistical facts in regard to the quantity and increase of the tobacco crop in this country; also some brief remarks and directions respecting its culture both at the South and in the New-England States. In the present article we propose to refer briefly to the cutting and curing of the crop.

As soon as the plants come to maturity—which will be generally in about three months after setting out, and which will be indicated by their leaves assuming a spotted and yellowish appearance, and becoming thick in texture, and gummy to the touch—they are ready for cutting and housing. This is considered one of the most critical stages in the whole process of preparing the crop for the market, and the most delicate and difficult part of the business of the planter. In order to be successful, he must now give it his undivided attention, as almost the entire profits of his whole crop for the year depend upon the diligence and skilful management exercised during the few days of cutting. The planter should, previous to commencing this operation, especially if he has an extensive crop, have every thing in preparation, such as barns, wagons, &c., &c., and every arrangement made to dispatch business with all possible diligence. The best method is, to have a number of forked stakes driven into the ground, on which poles may be laid to support the tobacco, and keep it from the ground during the process of *wilting*, or "*falling*," as it is generally termed by the planters. Warm sunny weather should be selected for cutting the plants, which should be done by passing the knife obliquely through the stalk near the surface of the ground. After two or three sharp raps with the back of the knife, to remove the dirt or sand adhering to the leaves, they may be placed, singly or tied together in pairs, gently across the poles or riders prepared for them, until sufficiently wilted. The plants should then be removed to the drying-house or barn, and strung on frames, leaving a small space between each plant, that the air may circulate freely, and promote the drying. This process is performed in some portions of the South by artificial heat, the arrangement of the sticks supporting the plants commencing near the roof at the most elevated tier, and at a distance of about five inches from each other, the distance increasing with each successive downward tier, until the last or lowermost (generally about the seventh) tier of sticks, which are nearest the fire, are about eleven inches distant from each other. "This arrangement of the sticks," says an experienced tobacco curer of Virginia,* "I have ascertained by experiment, is important. The sticks of tobacco being farthest apart next to the fires gives a freer circulation, and consequently a more equal temperature, than the usual way of equal distance from the bottom to the top. The heat having more space to ascend, must be more equal and generally diffused, and will give a more uniform house of tobacco."

Many crops, however, are cured simply by the atmosphere alone. After being carried into the drying-house, and hung upon frames, leaving a small space between each plant, the process of drying commences, and as it gradually progresses, the stalks may be brought closer together, and thus leave

* J. F. Edmunds, Esq.

room for others to take their place. In this process, all damp air and moist winds should be carefully excluded, as far as possible. Also, all drying winds should be excluded, so that the operation may not be too rapid, which causes the evaporation of the aromatic oil, which is so highly conducive to the flavor of the tobacco.

After the plants become sufficiently dried, which may be known by the stems becoming hard and firm, and which will be in about two months after gathering, the leaves should be stripped from the stalks, and put in bulk to sweat. The best time to do this is in moist or cloudy weather, when the leaves are more pliable, easily handled, and less liable to crumble in the operation. Tobacco, at the South, is frequently sorted by experienced hands into three classes; the *first* of which comprises that of the best color and quality; the *second*, that which is somewhat inferior; and the *third*, the ground-leaves. After sorting, the leaves, either single or neatly tied up in bundles, called "*hands*," (consisting of about four leaves of the first class, and six of the second and third classes,) are packed down in bulk to "*condition*," as the process is termed by the planter. In doing this, the stems should be all kept in one direction, and the leaves packed straight. The bulk may be two to three feet high, and of any convenient length and breadth. This may be subjected to pressure from weights, to exclude as much as possible the air from the leaves. It should be watched carefully, and as soon as it is found beginning to heat, the leaves should be "*aired*" or dried, and repacked, placing those leaves which were outside of the heap, *inside*, to equalize the "*sweating*" process. This operation should be repeated and continued until the tobacco acquires the odor and other qualities desired. It should then be hung up to cure in the air, where it should remain until the stems are perfectly dry; after which it should be taken down, the leaves pressed together; and when a "*soft*" atmosphere renders the leaves a little moist, so that they will not crumble in the operation, the tobacco is ready for packing in hogsheads, in the usual way, for market. It loses in weight, but very much improves in quality, by keeping, sometimes commanding an advance equal to fifty, and, in some instances, one hundred per cent. per annum, for the first year or two after curing, from the superior flavor thereby acquired.

CHICORY.

WHILE in England, says a correspondent of the *Journal of the New-York State Agricultural Society*, we received information as to the culture of this plant, the roots of which are used as a mixture with coffee. In many of the establishments of the first character in London, where coffee is extensively sold, we found the real coffee, prepared and ground, and by its side, chicory, prepared and ground; and were informed at several of these establishments that it was preferred to mix them, one third of the chicory to two thirds of the coffee. The flavor of the chicory is suited to the tastes of many, and its medicinal qualities give it great favor. Most of that in use in England is imported from Belgium and Germany; but it is being cultivated to a considerable extent in England and Ireland, and the cultivation is increasing.

The seed is drilled in, in April, the same as carrots or beets, on rich light land, and thinned in the rows to about six inches, and kept entirely free from weeds. In September, the roots should be gathered. They are taken up with a potato-fork, and the tops taken off, and the roots are taken to a convenient place and thoroughly washed. The roots are cut in small pieces,

either by hand or a common turnip-cutter, having them as near a uniform size as practicable. The larger are then separated from the smaller, and put into coarse canvas bags and placed on a kiln to dry. They are then disposed of in market to the merchants, who prepare the root in the same manner as coffee, roasting and grinding. As soon as practicable after the roots are cut, they should be dried, to prevent the loss of the milky juice, which contains its most valuable properties. The leaves are fed to cattle and sheep, which are very fond of them; and they are also used as a substitute for woad for coloring, and are esteemed very valuable for that purpose.

F A R M I N G .—No. I.

To the Editors of the Plough, the Loom, and the Anvil :

OF the many subjects which are discussed, and from time to time presented before the public, the subject of farming is deserving much attention. The cultivation of the soil has been the occupation more or less of all ages, and ever must be; and in the same ratio as that occupation has received proper attention or has been neglected, so has wealth and prosperity increased or diminished. The history of the first and middle ages is filled with wars, devastation, and bloodshed. These occupied the time and attention of the inhabitants of the earth during those periods, to the neglect of agriculture; desiring more to destroy the produce of the fields of their enemies, than to cultivate their own. But those ages of darkness have passed away, and mankind now are engaged in agriculture, manufactures, and the cultivation of the arts and sciences. But agriculture at this day even is neglected; requiring as it does more labor, and not of so pleasant a nature as many other occupations, and also the few labor-saving machines which have been introduced into farming, in comparison with other employments, thereby rendering labor pleasanter and of more profit. The time when talent and genius will be devoted to farming and the improvements in farming implements, I hope is not far distant. Attention seems to be turning to that subject at present, and we have begun to have our share of inventions, but farmers seem as yet to be reluctant about using many of them. It is true that the most intelligent part of farmers adopt them, but the majority are as yet unacquainted with the principles of improvement or successful agriculture. The subject of manures, for instance, although it has been thoroughly discussed in agricultural prints, and ideas concerning it flung before the people, yet in regard to that there is room for great improvement. It is the farmer's mine of wealth; and the main object of the successful farmer should be to retain all its value, and apply it to the best advantage in raising the most profitable crops. The process of intermixing peat, mud, or loam with manure, is of recent origin; and there are very few probably at the present day who use sufficient quantities of the former to preserve all their manure, and thereby render it most suitable for the production of any crop. My manner of proceeding, in regard to manure, is this: I usually cart about thirty horse-loads of loam into my yard, to be spread, to save the urine and droppings of my cattle. In the summer and fall, or at all times when not frozen, I proceed to the yard with my shovel every morning, and fling the droppings of the cattle into heaps, which I cover over with fresh mould, brought into the yard once or twice a week; this, frequently flung over, and afterwards mixed with that on the bottom of the yard, which is well saturated with urine, makes a very valuable manure, and also saves all the valuable parts of it. Manure in the winter, in the cellar, should be well mixed with loam, when not frozen too hard

to prevent using to advantage. I usually spread two or three horse-loads of loam per week on my manure in the barn cellar. My stock numbers eight. By adding this quantity, the manure is much improved for any crop. This is, in my opinion, the cheapest and best method of managing my manure. What further remarks I have to make on this, and also in regard to some experience in relation to cultivation of different crops for profit, I find it necessary to reserve for another communication, if it would be desired.

South Walpole, Mass., February 23, 1852.

J. N. SMITH.

THE TOPOGRAPHY, GEOLOGY, AND AGRICULTURAL PRODUCTS OF LAMOILLE COUNTY, VERMONT.

To the Editors of the Plough, the Loom, and the Anvil:

LAMOILLE COUNTY lies between $44^{\circ} 24'$ and $44^{\circ} 46'$ north latitude, and $4^{\circ} 7'$ and $4^{\circ} 34'$ east longitude from Washington; and is bounded north by Franklin and Orleans counties; east, by Orleans, Caledonia, and Washington counties; south, by Washington and Chittenden; west, by Chittenden and Franklin counties. The extent north and south is about twenty-seven miles, and nearly the same east and west. Some towns are mountainous and hilly, but much less so than many other portions of the State. It contains four hundred and twenty square miles, mostly within the two ranges of mountains, or, as usually denominated, the "Y." The highest mountains in the State are located in this county. The Chin, or north peak of Mansfield mountain, is four thousand two hundred and seventy-nine feet in height; the altitude of the south peak, or the Nose, is three thousand and eighty-three feet. These peaks derive their names from the striking resemblance to the profile of a man reclining on his back, his forehead, nose, and chin being well defined. The principal river is the Lamoille, which enters the county in Wolcott, and passes out in Cambridge. It receives most of the waters of the county, and courses in a north-west direction, discharging its waters into Lake Champlain, in Milton, south of the sand-bar which is formed by the alluvium constantly floating down this river. Waterbury river receives its forming branches from Stirling, Mansfield, and Stowe, and discharges its waters into the Winooski, in Waterbury. The soil of this county is highly productive; the rich bottoms on the rivers were originally covered with a deciduous growth, consisting of elm, lime, birch, sugar maple, beach, and butternut trees. The leaves of these trees, with the herbage, both being very luxuriant, falling on the surface for many centuries, there forming a rich mould, with occasional inundations, the soil, to a great depth, was as rich as land could be. When first cleared, the crop must be corn or potatoes, to reduce the soil. Wheat would grow so luxuriantly, the heads would not fill, and, from information of the early settlers, it would reach the height of six feet. Latterly, a crop of wheat is uncertain, in consequence of the rust or mildew; but other crops are abundant, by turning up the rich soil. As we leave the intervalles, and ascend the higher alluvial arenaceous plains or *deltas*, which are abundant, skirting the river, they are more arid, and not so prolific in grass, but quick, early land, and good for a crop, if well manured: it is well adapted to the growth of oats, rye, and corn. On those plains the farmers use much plaster, lime, and ashes, alone or mixed with other fertilizers. Originally those arenaceous plains were covered with a very heavy growth of timber; hemlocks very tall, and three to four feet in diameter; spruce, and some pine, with hard wood, particularly sugar maple. Some good sugar orchards are now preserved on

those plains. The higher lands are marly, clayey, or loamy. These lands are rich and productive, and abundantly reward the industrious agriculturist. The marly lands produce grass in abundance, and wheat, if it does not rust. Our high loamy lands are very well adapted for grazing, and the only sure place for wheat in hot summers, more particularly hot nights, when the kernel is soft, or in the milk. I have studied this operation sufficiently to satisfy me it is not the hot days that cause mildew or rust, but the hot *nights*; the sap rushes up the culm faster than the grain or head can digest it, and ruptures the stalk, and the grain can receive no further nourishment. If any one doubts my theory, *use* the microscope as soon as the rust is discovered.

ARIEL HUNTON.

CORK.

THE nature of this singular and useful material, and the countries from whence it is obtained, are not, probably, by all our readers generally known. Cork, in the state usually brought to our market, is unwrought bark of a tree, being a species of the oak, which grows wild in the countries of Southern Europe.

The tree is stripped of its bark at about fifteen years old, but before stripping it off, the tree is cut down, as in the case of the oak. It is taken while the tree is growing, and the operation may be repeated every eight or nine years. As the age of the tree increases, the quality of the bark improves. When it is taken off, it is singed in the flames of a strong fire, and after being soaked for a considerable time in water, it is placed under heavy weights, in order to render it straight. Its extreme lightness, the ease with which it may be compressed, and its elasticity, are properties so peculiar to this substance, that no effectual substitute for it has yet been discovered. Its valuable properties were known to the Greeks and Romans, who employed it for all the purposes for which it is used at present, with the exception of stopples, for which the ancients mostly employed cement. The Egyptians are said to have made coffins of cork, which, being spread on the inside with a resinous substance, preserved the dead from decay. Cork was not generally used for stopping bottles and other vessels, till about the close of the seventeenth century, wax being used till then for that purpose. The cork imported into Great Britain is brought principally from Italy, Spain, and Portugal. The quantity annually consumed is upwards of five hundred tons.

TO MAKE EXCELLENT COFFEE.

ALTHOUGH there are but few who are not accustomed to the use of coffee as a beverage, and who acquire by habit a peculiar fondness for it, still but very few, comparatively, partake of the article in its true flavor and richness. In order to do this, procure the best coffee in market, wash it very clean, and roast it, but not to blackness. A rich brown or bright bronze color is all-sufficient for the purpose of giving it the requisite flavor. Then take the whites of three eggs to each pound of coffee, mix very carefully with the coffee while warm, and immediately transfer to earthen vessels, tying them over with bladders or varnished muslin, to render them air-tight. Take from these vessels sufficient coffee for one making only at a time, grind it, place it in a fine muslin bag, suspend it about midway in the pot, turn on the

boiling water, and put on the cover to prevent the escape of steam. The result of this will be a very strong decoction, which should be reduced by the addition of boiling-hot milk, constituting a most delicious beverage, very different, indeed, from that which is produced by boiling the ground coffee in water. The above process may appear, at first, to be somewhat troublesome, but we very much doubt, if our lady readers will once make the experiment for themselves, whether they will ever return to the old method of *boiling* the dregs to produce good coffee.

MANUFACTURES AT THE SOUTH.

At Mobile, of the two large cotton mills but recently erected, one is stated to be already closed, and the other is carried on at a loss, a state of things that cannot long endure, and the result must be that both will soon be closed. If our readers desire to understand why this is so, the reason can readily be given. Just at the time that the cotton manufacture had begun to locate itself in the cotton fields of the South, the tariff of 1842 was repealed, and that of 1846 substituted in its place. Up to that time there was a fair prospect that in a brief period the manufactures of the North and East would be enabled to apply themselves to the work of supplying the rapidly increasing demand for fine cottons, leaving to the South that of supplying the demand for coarse ones, which should now be sufficient to absorb eight hundred thousand bales. With the passage of the act of 1846, this hope ceased to exist, and it became settled that the manufacturers at the North must confine themselves to the production of coarse goods, for which, *during the continuance of the brief period of prosperity that resulted to our farmers from the famine year of England*, the demand continued to increase, until at length it absorbed above six hundred thousand bales. In the last three years, however, things have changed. The domestic consumption of cotton has fallen below half a million of bales; and while we slightly increase our export of fine cottons, that require little cotton for their production, we diminish greatly the consumption of coarse ones, that require much cotton for their production. The manufacturers of the whole country being limited to the production of coarse goods, it follows that both are competing for the possession of a market constantly declining in its extent, although our population rapidly increases; and the effect of this is to force down prices to a point so low that the manufacturers of both South and North are ruined. The effect of this is seen in the fact that the Southern manufacture diminishes far more rapidly than the Northern; and if the existing system be continued, the result must inevitably be that of limiting the production of cotton goods almost entirely to the mills of the North; and thus the measure which was adopted out of jealousy of the North will result in the establishment of their power over the planters of the South. At the moment of writing this article, we meet with an account of the destruction by fire of the *Laurel Factory*, at Columbia, S. C., a loss not likely soon to be repaired, for under existing circumstances no one will build cotton mills. In a few years more, fire and bankruptcy will have closed nearly all the mills south and west of Mason and Dixon's line, and then, too late, the planters will see and understand that the tendency of the tariff of 1846 has been and is that of dealing them the "tender mercies" of the mill owners of Manchester and Lowell, whereas that of the tariff of 1842 was towards their

deliverance from control by enabling them to bring the loom and the anvil to take their places by the side of the plough and the harrow.

The men of Lowell suffer heavily by this state of things, for their interests are precisely those of the South. Had the manufacture of coarse goods continued to extend itself among the cotton plantations, the increased demand for fine goods that would have been the necessary result would long since have enabled them to turn their attention to fine goods, that would be now paying them larger profits, while enabling them to pay larger wages to those in their employ, and the effect of those wages would have been to enable all to consume more largely of the coarse ones. Between the planter and the farmer, the agriculturist and the manufacturer, the manufacturer and the ship-owner, the men of the North and the South, those of the East and the West, there is a perfect harmony of interests, as will be realized whenever the planters shall open their eyes to the great fact that PROTECTION IS THE SHORT, THE EASY, THE PROFITABLE, AND THE ONLY ROAD TO PERFECT FREEDOM OF TRADE.

NEW BOOKS.

Rural Homes; or, Sketches of Houses suited to American Country Life; with Original Plans, Designs, &c. By GERVASE WHEELER. 1 vol. 12mo., pp. 298. New-York: Charles Scribner, 145 Nassau street. 1852.

This is an unpretending, but neat, tasteful, and very useful volume. While the author modestly disclaims any title to originality, his book, in its designs, plans, descriptions, and particularly valuable suggestions, is far better entitled to the credit of originality than most of those of much higher pretensions. The author has certainly given the public a work which will be welcomed by every builder, mechanic, and gentleman of taste throughout the country. Himself a practical architect, Mr. Wheeler has imparted many useful instructions in regard to building in the various styles suited to the means and convenience of all. His work contains simple and comprehensive directions to all desirous of building, embracing every variety of home usually needed. It commences with the first foot-tread upon the spot chosen for the house; details the considerations that should weigh in selecting the site; gives models of buildings, differing in character, extent, and cost, and suited to particular localities, and to circumstances, fully enlarged upon; shows how to harmonize the building with the surrounding scenery, and to reconcile economical expenditure with truest refinement of taste; teaches how healthfully to warm and ventilate; assists in selecting furniture, and the innumerable articles of utility and ornament used in constructing and finishing; with remarks upon the adjuncts to a house, its entrance lodge and its numerous out-buildings. It concludes with final practical directions to building amateurs, giving a few useful hints as to drawing up written descriptions, specifications, and contracts.

We copy the following remarks in regard to the choice of a site for a rural home, as illustrative of the style and character of the work:—

“Think more than once before selecting too large a tract of ground. Space is desirable, undoubtedly; but a ramble in country lanes, and in woods skirting your place, is as pleasant as if in your own grounds, and enjoyed at a far cheaper rate.

“If you really, soberly understand farming, and wish to devote your time and attention to agricultural pursuits, well and good; purchase, then, just so much land as you feel you can control; or, if you have wealth enough to permit you to play at farming, and to raise potatoes at four dollars a barrel, when you can send to the city and buy them at three, and to cultivate other charming crops at a like scale of expense, get as many broad acres as you have a mind to; but for the particular spot where you mean to place your house, choose as follows:—

“Rather prefer a quiet, smiling, little nook, with a rolling surface of natural grassy slopes, tenderly shaded with many trees, than a rocky, bare, quasi-picturesque territory.

“Notice particularly how you are sheltered, by hills around, from the quarter whence cometh the wintry wind, and so prefer rather the gentle slope of a long hill to its summit. Many will tell you, it is true, of the ‘fine views’ you may enjoy from thence; but distant prospect is monotonous; I repeat, monotonous, though, in so saying, I hazard the inflic-

tion of the title barbarian. Saving some very beautiful effects of aërial *chiaroscuro*, which lighten and quench the gray of the mountain, the view varies but little, however extensive may be the panorama.

"It is the foreground, the familiar objects near the eye, that are varying ever: change of leaf; growth of twig upon twig; budding and fading of flower; constant shifting of the margin of the near winding brook, that make a *coup d'œil* that is never monotonous, for the relation and the aspect of each atom are perpetually varying.

"Apart from these artistic reasons, there are others of very simple and matter-of-fact character that would lead to the preference I advise.

"On the summit of the hill, water is difficult to be obtained without great expense; on the side, it may be found in abundance. On the summit, stone, and sand, and timber have all to be slowly and painfully hauled from below; on the side, perhaps, all of the materials may be almost at hand, and, at any rate, are more easily reached.

"There are some beautiful places (I have one now in my memory) where, with ravine, and waterfall, and forest trees, and evergreen groves, below and on either side, the most eligible spot for the house seems to be on a large extent of level table-land, that, without being on the summit of a bill, is yet elevated above the surrounding surfaces. In such a case, carefully avoid so placing the building as that it appears to stand alone, unsupported by stately trees or rising hills in the midst. Nothing can look more bare and un-homelike than an edifice so situated: if there are positively no trees near, and you have, after careful pondering over every foot of ground about your place, been forced to to the determination to build your house on such an open space, all that can be done is, to surround your dwelling as much as may be with architectural shade, and to give it base upon the ground by spreading its verandahs, porch, and ombra, widely on either side, trusting to the growth of the young trees you have liberally scattered around, and to the success of your efforts at removal and transplanting of larger trees from elsewhere, to provide a natural shade that will relieve the bareness of the building and give its outlines connection with the landscape."

Notwithstanding some of our contemporaries have criticized Mr. Wheeler's work rather severely, we cannot see any just cause for it. We believe it will have an extensive circulation, and be received with general favor by all classes, who, we doubt not, will be both interested and instructed in Mr. Wheeler's "Rural Homes."

The Folded Lamb; or, Memorials of an Infant Son. By his MOTHER. With a Preface by his Father, the Rev. GEORGE ALBERT ROGERS, M.A., author of "Jacob's Well," etc. 16mo., pp. 206. New-York: Robert Carter & Brothers, 285 Broadway. 1852.

This is another of those beautiful gems of loveliness which emanate so frequently from these excellent publishers. "The Folded Lamb" is the touching and appropriate title of the work, being a well-written, affecting memorial of infant piety and early bereavement, by an affectionate mother, suffering the loss of the loved and lovely object of her affections, and drawing, at the same time, precious consolations from the Word of Life. As an excellent work for mothers, it will be read with deep interest, and every child may peruse it with profit. Every Sabbath-school and family circle should supply themselves with this valuable little volume.

Children, their Hydropathic Management in Health and Disease. A Descriptive and Practical Work, designed as a Guide for Families and Physicians. Illustrated with numerous cases. By JOEL SHEW, M.D., author of various works on Hydropathy. 12mo., pp. 430. New-York: Fowlers & Wells, Publishers, Clinton Hall, 131 Nassau street. 1852.

When we take into consideration the startling fact that in the whole civilized world about one third of the human race die within the first three years of their existence, and one half during the first five years, we shall very readily enter into the philanthropic spirit of the author of a work having for its object the reduction of the mortality and the alleviation of the sufferings attendant on infant life; and for a work like this, we know of no one better qualified than Dr. Shew. Although we have a high regard for the skill and intelligence of the well-educated allopathic physician, we willingly confess our predilections are altogether in favor of the hydropathic treatment; and for children particularly, this system possesses high claims.

Having perused the volume with much interest, we feel very great confidence in recommending it to public favor. Its object is to instruct those who are interested in

regard to the management of children, both in health and in sickness, and we believe it will be found a most useful and safe guide to follow. It is intended generally for family use, and will confer upon the *people* generally a very great amount of obligation for the information it embodies, although it will also be found a useful and convenient work of reference, even for the *physician*. We trust the enterprising publishers will have the pleasure of furnishing it for every family in the land.

The American Rose-Culturist : being a Practical Treatise on the Propagation, Cultivation, and Management of the Rose in all Seasons ; with a List of Choice and Approved Varieties, adapted to the Climate of the United States ; to which is added Full Directions for the Treatment of the Dahlia. Illustrated by Engravings. 12mo., pp. 96. New-York: C. M. Saxton, Agricultural Book Publisher, 152 Fulton street. 1852.

The above full and comprehensive title will give the reader a concise description of the contents of this valuable little work. While several treatises on the culture of the rose have made their appearance before the public, none have seemed to unite practical and useful information with a price that will place those works within the reach of all. This objection has, however, been entirely obviated by Mr. Saxton, whose abundant facilities and practical experience eminently qualify him to take the lead of the agricultural press in this city, and probably in the whole country. This useful little work forms another volume of "Saxton's Cottage and Farm Library," which is destined, we believe, to occupy a wide and extensive field of usefulness. "The American Rose-Culturist" is published in a neat mail form for twenty-five cents, and well bound in full cloth at fifty cents per copy. Every family who cultivates this beautiful flower should possess it.

The Way to Do Good. By JACOB ABBOTT. Being greatly Improved and Enlarged. With Numerous Engravings. 12mo., pp. 402. New-York: Harper & Brothers, 82 Cliff street. 1852.

The popular author of this most excellent work is well known to the public. His "Young Christian" is found in every pious family, and "The Corner-Stone" is equally a favorite with the religious community. "The Way to Do Good" is the third volume of the series, and we are exceedingly gratified to see this valuable work now issued in the elegant style in which the publishers have placed it before the public. With such volumes in the hands of parents who desire to see their children truly benefited, and are willing to be themselves instructed, the whole community would be far happier, wiser, and better than it now is. "The Way to Do Good" should find a place on every parlor table and in every library in the country. We most cordially recommend it to all.

The American Journal of Science and Arts.

This excellent journal continues to increase in interest, and the valuable scientific knowledge and deep research indicated in the several articles of the talented contributors and distinguished editors most fully commend it to every scientific and thinking mind. The number for March contains a great variety of scientific papers by the editors themselves; T. S. Hunt, J. P. Kirtland, W. J. Craw, and W. Hosking, Esqs.; Professors Le Conte, Boyé, Page, Faraday, Root, and Hubland; and Doctors Charles D. Meigs, Henry Goadby, S. P. Hildreth, D. J. Macgowan; and many others from men of distinguished reputation. The subjects embrace a very extensive variety, and are such as cannot be considered properly without a deep and increasing interest. Every person desirous of keeping up with the scientific progress of the age should by all means become a subscriber to the work. Published by Messrs. Silliman and Dana, Hew-Haven, Conn.

Walks and Talks of an American Farmer in England. With illustrations. New-York: G. P. Putnam, 155 Broadway. 1852.

This is the title of the third number of Putnam's admirable semi-monthly series, forming his valuable "Library for Travelers and the Fireside;" and will occupy a very important place in the familiar reading of the family or the traveling public. The author writes in a very pleasing and easy style, and gives a delightful home-picture of English

farming life. His tour was made under favorable circumstances for familiar observation; and being himself an agriculturist, he has succeeded in laying before the public much practical agricultural information and many useful suggestions. Indeed, we do not recollect to have seen a work on the subject which is so well calculated to contribute, both morally and socially, to the enjoyment and useful information of the reader, either in the railroad-car, the stage-coach, or at the family fireside, than this little volume, the price of which is only twenty-five cents.

Rural Architecture. Being a Complete Description of Farm-houses, Cottages, and Out-buildings, comprising Wood-houses, Work-shops, Tool-houses, Carriage and Wagon-houses, Stables, Smoke and Ash-houses, Ice-houses, Apiary or Bee-house, Poultry-houses, Rabbitry, Dovecote, Piggery, Barns and Sheds for Cattle, &c., &c., &c.; together with Lawns, Pleasure-grounds, and Parks; the Flower, Fruit, and Vegetable Garden. Also, Useful and Ornamental Domestic Animals for the Country Resident, &c., &c., &c. Also, the Best Method of Conducting Water into Cattle-yards and Houses. By LEWIS F. ALLEN. Beautifully Illustrated. 12mo., pp. 384. New-York: C. M. Saxton, Agricultural Book Publisher. 1852.

The above is the title of an excellently arranged and beautifully executed work on rural architecture, which, notwithstanding the various works already published on the subject, will be a highly acceptable and almost indispensable work for every farmer and gentleman of rural tastes and habits. It contains a great variety of well-executed and very convenient original designs and plans of country and farm residences, and we believe is one of the most valuable publications of the kind that a farmer can possess. It matters not if a house is already possessed and occupied, as we know there are thousands already thus comfortably located and "settled," perhaps for life, who need just such a book to point out to them a great number of conveniences and improvements about their houses and grounds that never suggested themselves to their own minds, but which they will find it necessary to adopt, and wonder that they had never thought of them before. In short, it is a volume alike adapted to the farmer and every friend of rural improvement in the country; and, in fact, it needs no better recommendation than that of being published by Mr. Saxton, whose valuable publications are so well known and appreciated throughout the country. As a work combining elegance, utility, and cheapness, Allen's "Rural Architecture" stands preëminent.

The Youth's Cabinet: A Book of Gems for the Mind and the Heart. New-York: D. Austin Woodworth, 118 Nassau street. 1852.

The sixth bound volume of this most interesting of our exchanges, devoted to the amusement and instruction of youth, has been some time before the public, and, we are happy to learn, finds unusual favor with our young readers in every part of the country. Indeed, with the high literary attainments of the gifted editor, and the indefatigable energy and judicious efforts of the enterprising publisher of this work, we might reasonably entertain the highest expectations in regard to its general usefulness and popularity. The volume complete is a beautiful specimen of pictorial and typographical excellence, which will cause many a bright eye to sparkle and young heart to glow with deep interest, while coming over the vivid productions of "Theodore Thinker." One dollar per annum, payable in advance. Every youth should possess the work.

EDITORIAL NOTE.—The extreme length of the leading article in our present number has crowded out many favors from correspondents, and prevents us from giving that variety to which we are accustomed to treat our readers. We hope the length of the article alluded to will not prevent it from being read with that attention which its merits and the importance of the topics it discusses demand. We hope in our next to give something like our usual variety.

ERRATA.

Page 583, line 10 from foot.—For "increased price has been a consequence of diminished quantity," read: "diminished price has been a consequence of increased quantity."

Page 589, second line over the diagram.—For "Demand overtakes supply," read: "Demand overtaking supply."

The Plough, the Loom, and the Anvil.

VOL. IV.

MAY, 1852.

No. 11.

LETTER TO A COTTON PLANTER OF TENNESSEE.

DEAR SIR:—We are quite agreed as to the plan proposed by the Macon Convention. Any attempt to carry it into execution by the planters can have, as you say, but one result, that of leaving them in a condition far worse than that in which they now are placed.

You make no reference to another project that is stated to have found much favour in the Convention, and to have been recommended for adoption by the committee of twenty-one. I find it in the number of De Bow's Review just received, and it is as follows:—

The convention is to adopt a plan for ascertaining the extent of last year's crop, and for this purpose county societies are to be organized, the officers of which are to be charged with the duty. Reports are then to be made to some officer at the seat of the State government, and he is to report to a central committee, by which the results are to be published, together with advice as to what portion of the crop shall be sold and what retained—and all this machinery is to be accompanied by an agreement among the planters "not to sell more than two-thirds of their respective crops before receipt of said report, and *not to sell any for a price less than agreed upon.*" Further, they are to agree "not to sell more of the reserved one-third than shall be advised by the central committee."

It is most singular that gentlemen of intelligence should suggest such projects in face of the fact that there exists, as I believe, no single instance of a combination of this kind having been successful, even when the number of persons engaged has been most limited. In dozens of cases, stock has been bought up and agreements have been made among the holders not to part with a share until it should reach a certain price, yet invariably has it been found that some one of them has been detected in feeding the market and realizing his gains long before the point agreed upon had been reached—fearful that if he waited longer *the corner* would be broken down by some other as unscrupulous as himself. Is it not inevitable that such must be the result in the present case should a plan like this be adopted? Is it not one that must end in enriching the unscrupulous and impoverishing the honest and high-minded planter who abides by his agreement? Unquestionably it is so; and were it adopted, it would for this reason alone, not to mention a host of other objections, be speedily thrown to the winds, leaving matters in a far worse condition than they are in at present—and that, I agree with you, is bad enough. It would, indeed, be difficult to conceive of any thing worse than a system that should make it the interest of a great body of land-owners to pray for short crops, as the only means of avoiding ruin. "Experience," says the author of the project to which I have now referred, "has shown that a crop of 2,700,000 bales, thrown on the market, will reduce the price of cotton to about five cents, whereas a crop of 2,200,000 will raise it to thirteen cents, or more." The latter crop will produce, as he says, a hundred and ten millions, whereas one of 2,800,000 bales will produce but sixty millions;

and "the bounty of Heaven, in the gift of good seasons, proves more destructive to the planters than seasons of drought, flood, storms, and frosts." This is, certainly, a sad picture; and what is more, as I conceive, and as you, I think, fully believe, it is not likely to be remedied by any of the projects that have been suggested at the various conventions that have been held.

You ask—What is the remedy? How can we bring about a state of things that shall give us something approaching to steadiness in the price of our great staple, and enable us to rejoice, as do other people, in good seasons and large crops? Why is it that we, of all the world, controlling the supply of an article of prime necessity, should be placed in a condition to be ruined by such seasons granted by the bounty of Heaven? That you should at this day have occasion to ask these questions is only evidence that you southern gentlemen have never fully appreciated the strength of the position that you might occupy if you would, and that you will occupy when you shall come to see that you have been steadily and regularly lending your aid to men whose interests are directly the opposite of your own, and whose every effort tends towards bringing about the state of things of which you now complain. The man of Manchester flourishes when you are being ruined; and yet, when you desire advice as to how you may avoid ruin, to whom do you apply for it? Is it not to the man of Manchester? Assuredly it is; and when your cotton is low because of having taken his advice, does he not feast the agent through whom he has acted for the purpose of producing this effect? He does so, and well can he afford it.

In olden time, the physician, when called to see the sick, was accustomed to prescribe to all patients with similar symptoms the same remedies—the consequence of which was that he was quite as likely to kill as to cure. In our day, the skilful physician endeavours to ascertain the cause of the existence of the symptoms, and not unfrequently finds it necessary to administer directly opposite remedies where symptomatology would have taught him to administer the same—and it might be that an inquiry into the real causes of the disease now existing among the producers of cotton would be attended by similar results. As yet, the latter seem to know of but one mode of remedy, and that the same formerly practised by the Dutch—*limiting the supply*, by agreeing among themselves how much they shall plant, or how to lock it up after it has been picked. Now, there is, as I think, another remedy that is quite certain and perfectly practicable, and that is *increasing the demand*, and so far increasing it, too, as to render it quite impossible that a state of things should ever exist that would induce the planter to pray for any thing but the largest crops that a bounteous Heaven would grant him—or that should ever, at the close of a rich and glorious harvest, induce to feel that his condition would be better had he and his neighbours been visited by "droughts and floods, storms and frosts."

You will ask, how is this to be accomplished? How can such a remedy be administered? Before answering these questions, it is necessary to inquire why it is that the consumption by the world of so important a commodity is so exceedingly small as it is. The whole average quantity produced does not, I feel assured, materially exceed 1,700,000,000 pounds,* and that is but about a pound and a half for each head of the population of the world—

* English writers are accustomed to tell us of the vast production of India, which they set down at more than 1,000,000,000 of pounds, but this is, as I think, but a flower of fancy. The whole export is but 150,000,000, and some of the most productive cotton districts export nearly the whole product, while in those which furnish little for export there is evidently very little grown, as any one will see who will consult Chapman's recent work on the Cotton Trade of India. It appears to me exceedingly doubtful if the whole product is more than double the quantity exported; and if this be so, that of the world cannot exceed the amount here set down.

certainly not one-tenth of what would be consumed could they find means to pay for it, and not one-tenth of what would be good for them; and yet it is a drug, selling in India at two and three cents per pound, and commanding here at this moment but seven and a-half cents, with a certainty that, should we again be favoured, as we were a few years since, with a succession of large crops, it will fall to a lower point than it ever yet has seen: a state of things that could not exist were the people of the world to consume even one-third as much as would be good for them. Why do they not? Why is it that India, with her hundred millions of population, and with her domestic manufacture in a state of ruin, consumes of British cottons to the extent of only sixteen cents per head—or little more, probably, than a couple of yards of cloth? To these questions an answer may perhaps be found upon an examination of the circumstances which govern the consumption of other commodities, for we may be quite certain that cotton obeys precisely the same laws as sugar and coffee, wine and wheat. Such an examination would result in showing that when a commodity is at once produced and on or near the place of growth in the form fitting it for use, the consumption is invariably large; and that when it has to go through many and distant hands before being consumed, it is as invariably small. The consumption of sugar on a plantation is large; but if it were needed that before being consumed it should be sent to Holland to be refined and then brought back again, we may feel well assured that there would not be one pound consumed on any given plantation where now there are twenty, or possibly fifty. The consumption of cotton on the plantation is very small indeed, because, before being consumed, it has to be dragged through the mud to the landing, thence carried to New Orleans, thence to Liverpool, and thence to Manchester, after which the cloth has to be returned, the planter receiving one bale for every five he sent away, and giving the labour of cultivating an acre in exchange for fifty, sixty, or eighty pounds of its product. If, now, the work of converting it into cloth were performed on the ground where it was raised, or in its neighbourhood, is it not clear that the consumption would be largely increased? The people who made the cloth would be the consumers of numerous things raised on the plantation that now are wasted, while the facility of converting such things into cloth would be a bounty on raising them; and thus, while five times the quantity of cotton would be consumed, the real cost—that is, the labour cost—would be less than it is at present. So, too, in India. It may be regarded as doubtful if the quantity of cotton now consumed in that country is one-half what it was half a century since—and for the reason that the number of people now interposed between the consumer and the producer is so great. The consumption of wine in France is enormous, whereas here there is scarcely any consumed, and yet the apparent excess of price is not so great as would warrant us in expecting to find so enormous a difference. The real cause is not so much to be found in the excess of price, though that is considerable, as in the mode of payment. A peasant in France obtains wine in exchange for much that would be wasted but for the proximity of the wine-vat, and the demand it makes for the labour of himself and others. He raises milk, eggs, and chickens, and he has fruit, cabbages, potatoes, or turnips, commodities that from their bulky or perishable nature cannot be sent to a distance, but can be exchanged at home. The farmer of Ohio cannot exchange his spare labour, or that of his horses, for wine, nor can he pay for it in peaches or strawberries, of which the yield of an acre might produce him hundreds of dollars—nor in potatoes or turnips, of which he can obtain hundreds of bushels; but he **must** pay in wheat, of which an acre yields him a dozen bushels, two-thirds of which are eaten up in the process of exchange between him and the wine-grower.

Whenever the culture of the grape shall come to be established in that State, and wine shall be made at home, it will be found that the *gallons* consumed will be almost as numerous as are now the *drops*. Look where we may, we shall find the same result. Wherever the consumer and the producer are brought into close connection with each other, the increase of consumption is wonderful, even where there is no reduction in the nominal price; and wherever they are separated the diminution of consumption is equally wonderful, even where there is a reduction of nominal price—and it is so because the facility of exchange diminishes as the distance increases. A man who has even a single hour's labour to spare may exchange it with his neighbour for as much cotton cloth as would make a shirt; but if the labour market be distant, he may, and will, waste daily as much time as would buy him a couple of shirts, and may have to go shirtless while cotton is a drug.

Before proceeding further, I would beg you to look around your own neighbourhood and see how many exchanges are even now made that could not be made by people that were separated even ten or twenty miles from each other, and how many conveniences and comforts are enjoyed in exchange for both labour and commodities that would be wasted but for the existence of direct intercourse between the parties—and then to satisfy yourself if the same law which may be deduced from the small facts of a village neighbourhood will not be found equally applicable to the great ones of larger communities.

It is considered a great grievance that the people of California and Australia should be compelled to send their gold to a distance to be finished and made ready for consumption in the market, and both Great Britain and ourselves are about to incur great expense with a view to *protect* the gold producers from the traders and transporters; and yet the loss to them resulting from distance from the place of conversion is not one tenth part as much as is the loss to the producers of cotton.

Having reflected upon these things, I would next ask you to look at the present condition of the cotton trade, and to remark the fact that scarcely any of the wool produced is consumed without first travelling thousands of miles and passing through almost hundreds of hands. The places of production are India, Egypt, Brazil, the West Indies, and our Southern States. In the first, the manufacture is in a state of ruin. In the second, third, and fourth, it has never had an existence; and in the last it has but recently made an effort to struggle into life, but from month to month we hear of the stoppage or destruction of Southern mills, and the day is apparently now not far distant when we shall have again to say that no portion of the cotton crop can be consumed in the cotton-growing region until after it shall have travelled thousands of miles in quest of hands to convert it into cloth.

Why is this? Why is it that the light and easily transported spindle and loom are not placed in and about your cotton fields? You have labour, *that is now wasted*, that would be abundant for the conversion of half your crops, if you would but bring the machinery to the land, instead of taking the produce of the land to the machinery. Once brought there, it would be there for ever, whereas you may carry the cotton to the spindle for a thousand years, and you will have again to repeat the work in the hundred and first; and yet you go on year after year transporting cotton out and cloth home, as if that were the way in which you are to be enriched.—Again, why is it that the people of India, to whom the world was so long indebted for all its cotton goods, have not only ceased to supply distant countries, but have actually ceased to spin yarn or make cloth for themselves? Why should they carry raw cotton on the backs of bullocks for hundreds of miles, and then

send it by sea for thousands of miles, paying freights, commissions, and charges of all kinds to an amount so greatly exceeding the original price, to part with sixty millions of pounds of raw material, to get in exchange certainly not much more than six millions of cloth, if even of yarn? Is it not clear that the labour of converting the cotton into yarn is not one-quarter as great as was the labour of raising the cotton itself? Nevertheless, we here see them giving ten pounds of cotton for probably a single one of yarn, while labour unemployed abounds throughout India. Further, Brazil raises cotton, and she has spare labour, and yet she sends her cotton to look for the spindle, instead of bringing the spindle to look for the cotton, as she might so readily do. Why does she so? The answer to these questions is to be found in British legislation.

The invention of machinery for spinning cotton was accompanied by the passage of a law prohibiting its export to any part of the world, and as artisans were forbidden to emigrate, there existed little danger that there should be carried abroad any knowledge of the new and economical modes of converting cotton into cloth. Here was a law restraining the people of England from the exercise of their rights, but *it was also a law restraining the people of the world from the exercise of their right to obtain from the inventors the use of the improvements that had been made; and its object was that of compelling them to send all their cotton to England, if they would have it spun or woven.* By degrees the export from India of manufactured cotton ceased, and that of raw cotton arose, and thus was England enabled to establish a system of *commercial centralization* such as has never before been seen—all the world competing with each other for permission to sell raw produce in her markets, and thus enabling her to fix the price of what she desired to buy—all competing with each other for the privilege of purchasing manufactured produce in her markets, and enabling her to fix the price of what she desired to sell. For a time this prospered with her, and she became rich; but the system was unsound, and tended to produce all the results that we now have occasion to observe. It was a system that tended to the ruin of her friends and customers. Adam Smith had told her that it was “a manifest violation of the most sacred rights of mankind.” He had told her that in the natural course of things, the artisan went to the place where food and the raw materials of manufacture were abundant and cheap, and that he ate the one while converting the other into the most compact form, so as to fit the whole for cheap transportation to distant countries. In a piece of woollen cloth, said he, are contained many hundred-weights of food and wool. Not only, said he, is it injurious to other nations, but it must be injurious to yourselves, for it will diminish the productiveness of both labour and capital, and will, at the same time, render you daily more and more dependent upon the operations of other countries, when you should be becoming more independent of them. His warnings were unheeded; and from that day to the present, England has been engaged in an incessant effort utterly to destroy the manufactures of India, and to *crush every attempt elsewhere to establish any competition with her for the purchase of cotton.** Is not this, I ask you, a true picture of the operations of the last

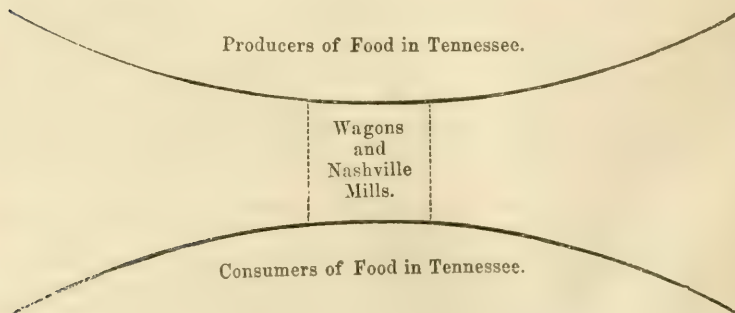
* In so doing, she has been crushing her own people. At the moment at which I am writing, one of the papers of the day has brought me an article from the *London Times*, the great advocate of the system, in which is the following passage:—

“Does it not appear at first sight a strange result of the terrible statistics of society, that upon an average one person out of twenty of the inhabitants of this luxurious metropolis is every day destitute of food and employment, and every night without a place for shelter or repose?”

More than one hundred thousand persons *every day* destitute of food and employment, and every day without a place for shelter or repose! Such are the awful results of the neglect of the warnings of Adam Smith.

seventy years? If so, and you must, I think, admit that it is, I will next ask you to remark the fact that in no country does there now exist any competition with her for the purchase of your great staple *where the people are not protected* against this attempt on the part of Great Britain to engross to herself the whole manufacture, and thus to deprive people who grow cotton of all power to trade with the world, except through her ships and her looms, her merchants and her manufacturers. Look at the facts for yourself, and see if it is not so. The manufacturers of India have ceased to be competitors for the purchase of the domestic product, which, therefore, has to go to England. The people of Portugal, the favoured land of free trade, are not buyers in the cotton market. Neither are those of Italy. Turkey was so, but she has become a mere dependant on the Manchester manufacturers. Brazil cannot convert her own cotton into cloth. Canada, Australia, and the West Indies buy no cotton, and they therefore consume but little cloth. Now, I need not say to you that it is when buyers are numerous that prices are high, and that when they are few, prices are low. Some competition does exist, but where is it to be found? Is it not in Russia, who protects her people in their effort to have direct trade with the producers of cotton? Is it not in France, in Belgium, and in Northern Germany, in which latter the consumption has grown in fifteen years of protection from forty to a hundred and forty millions of pounds? Is it not here, where protection to some extent exists? Abolish the protective laws of France and Belgium, Germany and Russia, and our own, and will not the consequence be that from that day forth the manufactures of all those countries will be at an end, and that the whole crop will thenceforth be thrown on the market of England, giving to her people power to dictate, and without appeal of any kind, the prices at which they will buy cotton and sell cloth? Such assuredly will be the case. Will that increase the consumption of your staple? Assuredly not. The owners of ships and mills will then be masters of the owners of plantations, as indeed they now are to an extent that you, I fear, would scarcely be willing to acknowledge.

To fully understand the working of this in diminishing the power to consume, let us apply elsewhere the same principle, placing in Nashville a set of corn-millers who had contrived so effectually to crush all attempts to establish mills in other parts of the State that no man could eat bread that had not travelled up to that place in its most bulky form, coming back in its most compact one, leaving at the mill all the refuse that might have been applied to the fattening of hogs and cattle—and that this diagram represented the corn trade of your State.



Now suppose all your food had to make its way through such a narrow passage as is above indicated, is it not clear that the owners of roads and wagons and mills would be the masters of the owners of land? Is it not clear that the larger the crops the higher would be freights, and the larger the charge for the use of the mills, the smaller would be the price of a bushel of wheat as compared with that of a bag of meal? That such would be the case, no one can even for a moment doubt—nor is it at all susceptible of doubt that the establishment of such a system would diminish by one-half the consumption of food throughout the State, and also the power to produce it, for all the refuse would be fed at and near Nashville, and the manure yielded by it would be totally lost to the farmer who raised the food. The value of both labour and land would thus be almost destroyed. Admitting, now, that such a system existed, what would be the remedy? Would it not be found in an effort to break down the monopoly, and thus to establish among the people of the State the power to trade among themselves without paying toll to the millers of Nashville? Assuredly it would; and to that end you would see them uniting among themselves to induce millers to come and settle among them, precisely as we see men everywhere uniting to bring schools and colleges to their neighbourhood, well assured that a small present outlay is soon made up, even in a pecuniary point of view, in being enabled to keep their children at home while being educated, instead of sending them abroad, there to be boarded and lodged, while food is wasted at home that they might eat, and chambers are empty that they might occupy. Education thus obtained costs a parent almost literally nothing, while that for which a child must go to a distance is so costly that few can obtain it. Precisely so is it with food and with cloth. The mere labour of converting the grain into flour is as nothing when compared with that required for its transportation hundreds of miles; and the mere labour required for the conversion of cotton into cloth is nothing compared with the cost of its transportation from the plantation to Manchester and back again. Commercial centralization looks, however, to compelling the planter to pay five times the cost of conversion, in the wages and profits of the people employed in transporting and exchanging the cotton.

Admitting, now, that the grain and flour trade were centralized in the manner I have described, what would be the effect of a succession of large crops, or even of a single one? Would not your roads be covered with wagons whenever they were passable, and even at times when they were almost impassable? Would not every one be anxious to anticipate the apprehended fall of prices by being early in the market? Would not freights be high? Would not the farmer, on his arrival in Nashville, find that every store-house was filled to overflowing? Would not storage be high? Would he not approach the miller cap in hand, and would not the latter receive him with his hat on his head? Assuredly such would be the case, and he would hear everywhere of the astonishing extent of "the surplus"—of how rapidly production was exceeding consumption—of the length of time his grain must remain on hand before it could be ground—of the low price of flour, &c., &c.—and the result would be that the more grain carried to market the less would be carried back, and *the less he would be able to consume*; and at last he would arrive at the conclusion that the only effect of large crops granted him by the bounty of Heaven was that of enriching the miller at his expense, by compelling him to allow more toll for the privilege of creeping through the hole provided for him by the miller. He would pray for droughts and freshets—for storms and frosts—as the only means of escape from ruin.

Is not this, I ask of you, a fair picture of the cotton trade? Do you profit by good crops? Assuredly not. The more you send to market the less you

get for it. Do you profit by improvements in the transportation of your commodity? Certainly not. With the growth of railroads, cotton has fallen in price, and will not this day command on the plantation half as much per pound as it did before a railroad was invented. In India, the cost of transportation from the place of production to England has fallen in the last forty years sevenpence,* and yet the grower of cotton obtains for it one-third less than he did before—receiving now little more than two cents, when before he had from three to four. Who profits by the reduction of cost of transportation and conversion? *The man who keeps the toll-gate through which it passes to the world*, and who widens it only gradually, so as to permit the increased quantity to pass through slowly, paying largely for the privilege.

In the article to which I have called your attention it is complained that even when the crops are short the planters do not benefit as they might do, because, while they are scattered and unable to communicate with each other, the dealers are centralized, and are thereby enabled to collect information and act upon it. Here is another of the consequences of the distance of the producer from the place of consumption, and thus it is that we see manufacturers grow rich while the planter is being ruined. The one buys when it suits him, while the other has to go to market when he can. Is not all this precisely what would happen to the growers of food if all the mills of your State were located in Nashville? Would not the millers be well informed in reference to every county, and would not they buy up cheaply in one part of the State when they knew that failure had occurred in another part? Would not all these things tend largely to diminish consumption?

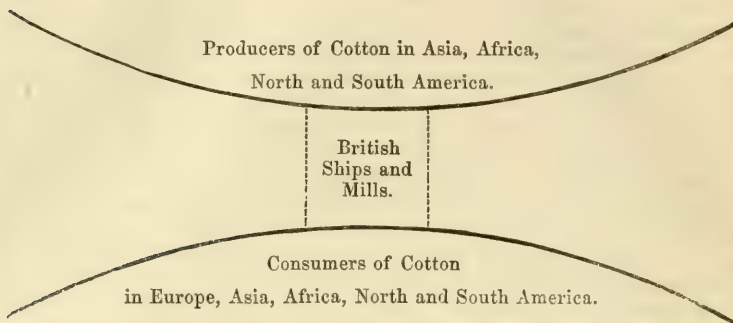
Let us now for a moment look to what would be the effect of *decentralization*. Suppose all the planters and farmers to determine to throw off the yoke of the Nashville millers, and to have a mill in every county in the State—and to carry their plan into effect. Would not they thereafter send their grain to millers at their own convenience, doing it on such days as they had horses and wagons, boys or men unemployed? Would they not in this way save all the cost of transportation? Would they not have to feed the miller and his men, and would not those men consume the more bulky products of the earth—veal, milk, and butter, potatoes and cabbages, and other things that would not bear transportation, and that would be in a great degree lost if not consumed at home—and would he not in this manner save almost all the cost of milling? Would not each farmer have the refuse to feed his hogs and his cattle, and would he not thus provide food with which to pay the miller and to feed his children and himself? If he desired to go to the distant market, would he not economize transportation by taking flour instead of grain? Would he not then be able to trade *directly* with the storekeepers of Nashville and Knoxville, Mobile and New Orleans, instead of being limited to the millers of Nashville? Would he not economize storage, by keeping his grain in his barn until he could take it to the miller, and his flour at the mill until he was ready to send it off? Would he not have everywhere **COMPETITION FOR THE PURCHASE OF HIS WHEAT?** Would he not enrich his farm and himself? Assuredly he would, for he would have acquired the power to determine for himself where he would sell and to whom he would sell—**IN WHICH CONSISTS REAL FREEDOM OF TRADE.**

In no part of the world, however, has freedom been secured by a single effort, nor would it be so here. The interests of the Nashville millers would be adverse to the establishment of competition for the purchase of grain or the sale of flour; and if any man should attempt to establish a mill in another part of the State, they would be sure to ruin him by offering to those who

* Chapman's Cotton Trade of India.

ought to be his customers new inducements to continue to trade with them. They would sell them flour and enable them to obtain iron and cloth for notes, or bonds. Rich themselves, they could afford to give long credit on flour, or to make advances on the grain in the ground, and their poor competitor would soon end his career by bankruptcy, thus affording to all around him new proof that the power of the confederated millers of Nashville could not be resisted. In this case, what would it be to the interest of your planters and farmers to do? Would it not be to come to a determination to *protect themselves in their efforts to bring the miller to their sides*, by agreeing to send him their grain to be ground, and to take the flour yielded by it back to their farms? Would they not be gainers by so doing, even admitting that each man contributed hundreds of dollars towards the building of the mill? Such a measure would, however, raise a great cry of "Free Trade" among the Nashville millers, who would discourse largely about the advantage of "buying in the cheapest market and selling in the dearest one," and the folly of any effort on the part of the farmers to have mills built at which they could make their exchanges on the ground, and huge tables of figures representing the imports and exports of Nashville would be published, proving that the more the people were relieved from the monopoly the poorer they grew; and Adam Smith would be quoted to prove precisely what he never meant to say—and it would be proved conclusively that the farmers would lose by having many mills at which they could exchange their wheat for flour, and many shops at which they could exchange their flour for cloth and iron. You would have your *Nashville Union*, and your *Tennessee Journal of Commerce*—journals established and maintained by the contributions of the associated millers*—labouring from day to day to prove that the farmers were enriched by having to employ more wagons, and the building of each new wagon would be chronicled as they now chronicle the building of each new ship; and the increase in the fortunes of the associated millers—the men who were living out of the spoil of the farmers—would be published to the world as conclusive evidence of the advantage to the people of Tennessee resulting from being obliged to carry all their grain to Nashville before they could either eat it or exchange it for cloth or iron: and many farmers would be silly enough to believe them as fully as do so many of our planters that their interests are to be promoted by having but one market in which to sell their cotton, and one in which all their customers must buy their cloth. The community would be divided between the advocates of the monopolist millers, ranged under the banner of "free trade," and the advocates of the farmers, who would counsel *protection* to themselves by persistence in their efforts to bring the millers to their sides; and the monopolists, by dint of *weighty* arguments, in various forms, addressed to editors and politicians, would probably break up the farmers' coalition; and this might be repeated time after time, until the latter could be brought fully to understand that *real free trade* consisted in the *exercise of the power to go to any one of many markets* and to trade directly with all the world, instead of being compelled to go to only one market and to pay heavy toll to the millers that controlled that one. Allow me now to ask you if this is not a tolerably fair picture of what is being done here and everywhere in relation to the cotton trade! Are not the planters limited almost entirely to one market, and would they have any market whatever but that one, except for protection? Is not the condition of things in that trade precisely as it is represented in the following diagram?

* But a little while since, a gentleman, supposed competent to teach the advantages of having but one market in which to sell cotton, and one in which to sell cloth, was offered a guarantee of \$10,000 per annum if he would set up a press, in New York, for that purpose.



You desire steadiness of price. How is it to be obtained? Before answering this question, I beg you to reflect what is everywhere seen to be the effect where drainage is imperfect, and see if in such cases water does not accumulate, overflowing the river banks and producing great destruction—and then to see if the difficulty is not precisely the same with your cotton. You need more and direct outlets. While there is but one through which a large crop is to pass, you are at the mercy of the man who owns it; but when you shall make a hundred for yourselves, you will need to pay nobody. Convert your cotton into cloth, and trade directly with the producer of coffee, sugar and tea, indigo, iron, and cloth, and your staple will not be heaped up at the only place of exchange, any more than will the water overflow the banks when there are numerous mouths by which it may be discharged. Watch the course of your own great river in the spring, and see how it overflows its banks, and the amount of ruin it causes among the levees in its passage to and below New Orleans, and then see how rapidly the stream subsides when it begins to find its way by numerous passages to the Gulf—and see if the facts there presented do not afford instruction in relation to the cotton trade. You need many outlets, but these you cannot have until you *finish your cotton* and put it into the form that fits it for consumption; and to accomplish this you must place the cotton mill among the cotton fields. That done, you will cease to pray for short crops, for then you will have large crops and good prices. Until you do that, all the benefit of improvements in machinery of conversion or of transportation will not only not enure to you, but they will be accompanied by further fall of prices, as has already been the case. If you doubt this, read the past. What was cotton worth *on the plantation* when you had scarcely even a turnpike or a steamboat, and what is it now when steamboats and railroads abound? Has the price risen with the building of steamboats and the making of railroads? Has it not, on the contrary, fallen to a ruinous extent, and precisely with the growth of facilities for transportation? When scarcely even a steamboat existed, you had fifteen and twenty cents a pound, *on the plantation*, and the buyer paid the cost of carrying it to New Orleans. Now, the latter has fallen one-half, or two-thirds, and the former has also fallen one-half; so that you have not only not gained but you have lost by the augmentation of facilities for going to market, and this you have done because the only effect of these facilities is to increase the bulk of the crop that has to seek a passage through the single outlet provided for it—and *the only effect of the new railroads you now propose to make will be a further increase in the mass seeking to go to market, and a further decline of price.* You are in the condition of a man who labours under a disease which requires that he should take some medicine to prepare him for eating with advantage—and that instead of taking medicine

to remove the disease takes food that increases it and must eventually kill him. Rid yourselves of the control of the Manchester manufacturers, and enable yourselves to trade directly with the world, and railroads and steamboats will tend to raise the price of cotton, but *until you shall do so, they can have no effect but that of lowering them.* Until the period of the revenue tariff of 1840-42, which looked to the establishment of the power of the Manchester manufacturers, cotton had never fallen so low as eight cents. Since then it has been still lower, and it is now only seven and a-half cents, with an absolute certainty that it will see five cents if you should be *cursed* by the bounty of Heaven with two or three good crops. Look at India. The cost of transportation has fallen sevenpence, and yet the ordinary price of cotton at the place of production is lower than it has ever been, although the product is, I am well satisfied, not one-half of what it was half a century since.

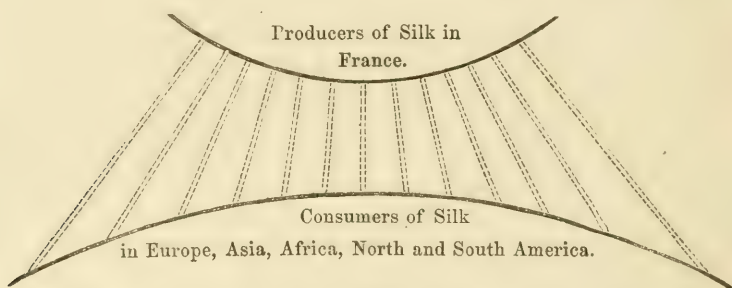
It is said, however, that there is something like a natural tendency towards a fall of prices, which means that there is a tendency towards an increase in the quantity of the products of the farmer, the planter, and the manufacturer, that must be given in exchange for a given quantity of gold—but that cannot be unless there is a greater increase in the facility of producing wheat or cotton than in that of producing gold—and such is certainly not the case. On the contrary, gold is now produced with more facility and in greater abundance than was ever before known, and the substitution of credit for coin is steadily diminishing the necessity for the latter, both of which circumstances should tend to raise prices, whereas that of cotton is lower now than it had ever been prior to the revenue tariff of 1840-42, and lower even than it was then, while flour is almost as low as we have ever known it. That no such tendency exists will be seen by the following table of the average prices of wheat in France for the past two centuries, by which it is seen that the average of the later periods was higher than that of the earlier ones, notwithstanding an increase of 150 per cent. per head in the gross amount of product.

1643 to 1715 average of 72 years.....	18.85 francs
1805 “ 1814 “ 10 “	21.00 “
1815 “ 1830 “ 15 “	20.62 “
1831 “ 1840 “ 10 “	19.03 “

The people of France combine their food with raw silk and send it abroad in the compact form of “silks;” and with clay, sending the two abroad in the form of porcelain, permitting as few people as possible to intervene between themselves and the consumers of their products.

Again: I have now before me a table of the prices of Russia iron for fifty-six years, beginning with £16 per ton and ending with £17 10s., and rising and falling in that period only about twenty per cent. Further, I have a table of the prices of English tin, in bars, for the same period of time, 56 years, in which the average of the first ten years was about £4 per ton, and that of the last ten £4 4s.—and another of the prices of tin-plates, showing a gradual rise from about eight dollars a box in 1843 and 1844 to an average of more than ten dollars in 1851 and 1852. Now, when you recollect how much iron goes to the composition of tin-plates, and how low is now the price of iron, you can see how large must have been the advance in the price of tin, with which England supplies the world. Again: look at the steadiness in the price of silk, of which eight departments of France produce as much as would exchange for almost half the crop of cotton produced in eleven States of this Union. It fluctuates up and down with the stocks, and men speculate in it as they do in the five per cents,

with a certainty that prices will be maintained if tranquillity be preserved. So is it with numerous articles that we import from France. The finer gloves and ribands are as high, if not higher, than they ever have been, and porcelain, notwithstanding improvements in the mode of manufacture, has not fallen, as I learn, one per cent. per annum for the last ten years. Why, now, is it that these things are so steady, while cotton fluctuates to so great an extent that a large crop is ruinous to the planter? Simply because the makers of tin and of Russia iron, gloves, ribands, and porcelain, are not obliged to pass the whole of their products through a narrow strait owned and occupied by men whose success in life is wholly dependent upon making the passage as difficult as possible, that they may charge the higher toll for the privilege of getting through. The silk of France is in the condition of the waters of the Mississippi below New Orleans. It is finished ready for use, and finds its way into the great ocean of trade by a thousand outlets, as is shown in the following diagram, which I beg you to compare with that given in relation to the movement of cotton:—



When the outlets are numerous, the only effect of a great fall of water is, that the volume of each little stream is increased, and therefore the water does not overflow the banks. When the crop of silk is large, it passes by a thousand outlets to the consumers, and a slight concession in prices, swells each little demand so as to prevent accumulation any where, and thus enables the silk-grower to rejoice over a large return to his labour. Let us have a large crop, and the single passage is so blocked up that the friction attendant upon passing through is so great as almost to absorb the whole value. Give yourselves numerous outlets. Finish your cotton, and enable yourselves to trade directly with the consumers of your products, and you will then, like the Frenchman, rejoice over a large crop.

The remedy for the evils under which you and your fellow-planters labour seems to me to be very clear. You need direct intercourse with the world; and that you may have it, you must learn to finish your goods for market, so as to enable you to exchange directly with the producers of silks and gloves, tea and coffee, sugar and indigo, and thus provide yourselves with as many outlets as has the silk of France. Until you shall do this, your condition will become worse instead of better—and, unless I am greatly mistaken, you will be fully satisfied of this before the lapse of three years. You are now rapidly closing one of the outlets, by stopping our own mills, and diminishing our domestic consumption, the consequence of which is seen in the fact that the quantity of cotton thrown on the English market last year was as great, out of a crop of 2,350,000 bales, as it was three years since out of one of 2,700,000—the consequence of which is seen in a fall from more than fifty to little more than thirty dollars a bale. Had the tariff of 1842 remained in existence, the domestic consumption of last year would unques-

tionably have exceeded a million of bales, leaving only 1,350,000 to seek a market abroad, and you would have had for it sixty dollars a bale instead of thirty,* and your crop would have yielded you a hundred and sixty millions of dollars, instead of eighty millions, and the only effect of your present crop of three millions would have been to give you fifty dollars, when now you will realize less than thirty. It will be said that these high prices would arrest consumption, but that is only one of the ingenious contrivances of the Manchester men, who themselves stop consumption when the prices are high, that prices may be diminished. Four cents upon a pound of cotton will not, on an average, give more than one cent upon a yard of cloth, and that difference never has stopped consumption, and never will. On the contrary, the increase in the consumption of this country consequent upon your prosperity, would be twice the diminution elsewhere. Instead, however, of increasing our consumption and diminishing your dependence on foreign markets, you are every day increasing the latter and diminishing the former. Your exchanges with the people of the North and West, and even with one another, are now every day more and more carried on through the narrow strait to which I have referred as being in the keeping of persons whose interests are directly adverse to your own—and thus it is that you check consumption while your crop increases and must continue to increase.

What is the remedy for all this? For an answer, look around and see where it is that consumption increases. Is it in Ireland, that has perfect freedom of trade, in the Manchester acceptance of the term, with England? Certainly not. The consumption there decreases. Is it in Portugal, Italy, Turkey, Canada, the West Indies, or India? Certainly not. Where, then, is it? Is it not in the protected countries of the world? Look to Belgium and France, to Northern Germany, and Russia. Since the adoption of protection by the *Zollverein*, in a period of fifteen years, the quantity consumed has grown from forty to one hundred and forty millions of pounds. In Russia, in the four years from 1846 to 1850, it grew fifty per cent. From 1842 to 1846 our consumption increased from 267,000 to 630,000 bales, whereas it has now fallen below half a million. Why is it that this increase has taken place? Is it not because there is a more direct trade between the producers and the consumers? Is it not because the people of Germany now import cotton directly from you instead of receiving it after it has passed through the mills of Manchester? Is it not because the man who needs cloth obtains it directly from the man who makes cloth, paying him for it in labour, and in the thousand commodities that may be consumed on the land, and that will not bear transportation? Assuredly such is the fact, as would be proved were protection abandoned in Germany, for then consumption would fall as it has here fallen under the tariff of 1846. What you need is direct trade with the consumers of cotton throughout the world, and that is to be had by the adoption here of the same measures that have given and are daily more and more giving to Germany direct trade with the producers of cotton and the consumers of her wool. Fifteen years since, that country exported wool and imported cloth, thus carrying on trade with the world, as you do now, through the medium of British ships and factories. Now the export of wool has nearly ceased, and cloths go abroad to be exchanged for foreign wool and cotton. If Germany can do all this in fifteen years, can you not do as much? Be assured you could. Determine to adopt the same measures that have so perfectly succeeded in Germany, and you will find that your success will be even more perfect. It needs but to determine that the spindle and the loom shall come to the cotton fields, and they will come—

* These prices have reference to four hundred pounds as being the weight of the bale.

but so long as you shall continue in the belief that you are to be benefited by having only one buyer of cotton and one seller of cloth, to enrich himself at the cost of yourselves and your customers, and destroy the power of consumption by those customers, they never can come. It is absurd to hope for it.

It will, however, be said that the people of New England are to be the persons chiefly benefited by protection. Never was a greater mistake committed. The New-England factories can outlive those of the Middle and Southern States, and the only effect of the present revenue system is to rivet more firmly upon the necks of the cotton-planters the chains of Manchester and Lowell. Look at the facts. Small as was the consumption of cotton south of New England, it has already diminished one-half, and it is there that we find almost the one-half of the total reduction. Pass along the road from Baltimore to Washington, and look at the factories, and then go to Lowell and mark the difference. Go to the capital of South Carolina, and inquire if they are about to rebuild the factory lately burned. Pass on to Mobile, and see the two factories so lately built, one of which is already closed, while the other is carried on at a loss—and having done this, determine if protection is not the true and only road to the emancipation of the planter from the tyranny of the spindle and the loom. So well is this understood in New England that many leading manufacturers are decidedly opposed to efficient protection, because it tends to the production of domestic competition for the purchase of cotton and the sale of the cloth—precisely the things you should desire, and the things that would relieve you from all your difficulties. The more intelligent among the manufacturers, however, take a more enlarged and liberal view of the matter, saying that if you enable yourselves to make coarse cloths, they will, by the same measures, be enabled to make fine ones, and that their market will grow with the growth of yours, and this is the true view of the case. The interests of New England and of the South are one and the same. It was a New-England manufacturer that smuggled the first cotton machinery out of England, and it is to New-England mechanics that you owe many of the most important improvements in the conversion of your cotton into cloth. Between yourselves and them there is the most perfect harmony of real interests, and you can do nothing to injure them that will not do more injury to yourselves.

The price of the whole crop is not dependent upon the size of it, but upon the quantity that must pass to the consumers *indirectly*, through the narrow aperture provided for it by the people of Manchester. Protection in Germany has largely increased the quantity going directly to the consumers, and therefore you are benefited by protection in that quarter, at all events. Such has also been the case in France, Belgium, and Russia, and yet those countries do not adopt your ideas in regard to the mode by which we are to reach perfect freedom of trade. If they were to do so their consumption would diminish. The extension of the system of the *Zollverein*, which affords perfect protection, over Austria and Hungary and Austrian Italy, would do for Southern, what has already been done for Northern Germany—it would increase the consumption of cotton,—and yet your Manchester friends are opposed to it. Were the people of Portugal, Spain, and Turkey to determine to protect themselves in their efforts to have direct trade with the producers of cotton, it would be greatly to your advantage, because it would greatly augment their consumption of that commodity, now so small. If then direct trade, consequent upon protection, has been productive of such good effects in Europe, why should it not here have similar results? If the necessity for maintaining indirect trade has produced the evil effect of diminishing the consumption of cotton, as shown in all the countries that maintain

Manchester free trade, can it produce other effects here? Has it, I ask you to reflect, ever produced other effects among ourselves? Did not the consumption of cotton, among ourselves, grow rapidly under the two protective tariffs of 1828 and 1842, and did it not decrease as rapidly under the revenue tariff of 1840-42—and is it not now in like manner diminishing? Does not every reduction of home consumption increase the mass that must pass through the narrow strait provided by the Manchester men, whose wealth is dependent altogether upon the increase of friction in the passage between the consumer and the producer? To these questions you cannot, as I think, return any but an affirmative answer. Rely upon it there is but one mode in which you can emancipate yourselves, and that is by determining that you will take for yourselves efficient protection in your efforts to bring the spindle and the loom to the cotton fields, and thus establish direct trade with the consumers of cotton.

In conclusion, let me now ask of you a few more questions: What is it that you desire? Is it not that cotton may be high, and that cotton goods shall be cheaply furnished to the world, so that consumption may be large? Such certainly is the case.—What then is it that the Manchester manufacturer desires? Is it not that cotton may be low, and cotton goods high? Unquestionably it is so.—Are not then the objects you have in view directly the opposite of those of the Manchester man, and is it probable that you and he can be benefited by the same course of policy? It seems to me quite impossible that you should.—Look now at the facts. *He* opposes protection in Germany, and yet under protection *you* have had your market increased in fifteen years from 40 to 140 millions of pounds. *He* opposes protection in Russia, and yet under protection *you* have had your market increased fifty per cent. in four years. *He* opposes protection here, and yet under protection *you* had your market doubled in five years. *He* advocates free trade in Ireland, Turkey, and Portugal, where *you* have seen your market diminish from year to year. *He* insists on what he calls free trade with India, by aid of which *you* have seen the cotton of that country forced to England, there to swell the quantity seeking a market, with correspondent diminution of price. *He* advocates here, that which in Manchester phraseology is called free-trade—the system which tends to limit you to one market in which to sell your cotton and buy your cloth—and yet under that system consumption declines from year to year. *He* desires that you should send him much cotton that he may have it low. *You* pray for frosts and droughts that he may be compelled to pay high prices for it. *He* seeks to promote the cultivation of cotton in Liberia and in Southern Africa, and *you* desire that there it may not be cultivated. *He* seeks to substitute flax for cotton,* and *you* desire that he may not succeed. There is thus a direct opposition in regard to the objects everywhere to be accomplished, and in the measures everywhere to be pursued for the accomplishment of those objects, and yet the mass of your fellow-planters look to those very men, whose interests are so opposed to their own, for instruction as to how they are to defeat them and benefit themselves,

* By late advices from Europe, we learn that the Chevalier Claussen has succeeded in disposing of his patent for preparing flax-cotton, as follows:—

In France, for.....	£50,000	sterling.
In England,.....	50,000	“
In Ireland,.....	40,000	“
In Scotland,.....	25,000	“
In Belgium,.....	20,000	“
In Holland.....	20,000	“

Total£205,000 “

Equal to about \$1,000,000, besides a royalty on all manufactured.

and they rejoice when Manchester acknowledges the benefit she has received at the hands of Mr. Walker IN DESTROYING THE COMPETITION FOR THE PURCHASE OF COTTON, for that is the direct effect of the tariff of 1846. The Manchester men see that the effect of that tariff has been to send them, out of the last and present crop, at least a million of bales that but for Mr. W. would have been consumed at home, and they rejoice in the fact that this million of extra bales comes to them *as a free-gift on the part of your planting friends*, the price of four millions of bales being much less than would have been that of three millions. It is a large gift, but should you rejoice with them? Should you take counsel of them when such are the ends they desire to attain? When the objects in view by two parties are directly the opposite of each other, is it wise in one to take counsel of the other? Would you do so with even your nearest and best friend, supposing that a case could arise in which you or he must be impoverished by the result of a lawsuit? Would you take the advice of your storekeeper as to the course by which you might be enabled to "buy in the cheapest market?" Would you go to a speculator in flour for advice as to how you might "sell in the dearest one?" Assuredly not; and yet, when you and your fellow-planters wish for advice as to how to sell your cotton and buy your cloth, you study, not honest old ADAM SMITH, but *Manchester* political economy, all of whose doctrines on the subject Smith repudiated, holding the practice under them to be "a manifest violation of the most sacred rights of mankind."

And now, my dear sir, having answered your question to the best of my ability, let me ask you to reflect seriously upon the great fact that you and your fellow-planters control the trade of the world in one of the most important articles of consumption, and yet that you are made the mere hewers of wood and drawers of water for distant monopolists who live by standing between you and your customers, and then to determine if you do not owe it to yourself and to the world, to unite in the effort to promote the adoption of those measures by which alone the spindle and the loom can be brought to the cotton fields, and by which alone real freedom of trade—the right to choose between many markets—can be secured.

Determine as you will, I pray you, however, to be assured of the respect and regard of

Yours, very truly,

HENRY C. CAREY,

BURLINGTON, April 22, 1852.

NEW WORK ON POLITICAL ECONOMY.—Mr. Henry C. Carey is engaged in the preparation of a popular Manual of Political Economy, for use in schools and colleges. We have long cherished an impatient desire for such a work, and know of no man so well qualified to write it as Mr. Carey. The books now generally in use, especially in our Northern institutions of learning, are utterly unfit for the purpose, being, like that of President Wayland, based on the theory of an essential hostility in the interests of the different classes of society, and teaching what is called free trade as the sum of practical wisdom. The pernicious effect of such works, so employed, upon the young minds of the country, is very great; and we are persuaded that a clear, popular text-book, setting forth the truth on the subject, will do more to counteract this influence than can be accomplished in any other way. It is remarkable that while Mr. Carey's previous and more elaborate works are used as manuals of instruction in some Southern and European colleges—at the University of Upsala, in Sweden, for example—they have not been introduced in any university of New-England, where one would expect them to be most employed. Mr. Carey's *Principles of Political Economy* is about to appear at Turin, in Italian, as the 13th volume of the *Bibliotheca dell' Economiste*. The Editor's introduction we have already seen: it settles the question between M. Bastiat and Mr. Carey, in favor of the latter.—*Tribune*.

PROFESSOR MAPES ON HIGH FARMING.

To the Editors of the Plough, the Loom, and the Anvil :

IN the *Plough, Loom, and Anvil* for March, appeared an article on "High Farming," from the *Journal of Agriculture*, by Professor Mapes, in which a system of what he calls "*thorough farming*," as practised by the best European and English farmers, is held up as a text for us to look at. Now this is all very well in its way, and probably many of the English farmers can better afford to farm high, than they can to go on a cheaper scale, as their rents must be paid at all events. That there are some English farmers who make fortunes out of this system of "high farming, with enormous rents and taxes," we do not doubt. But that the mass of such farmers make much money, or large fortunes, we do not believe; although, in their case, if any kind of farming can pay, with all their "taxes," it must be an improved system of farming, as we can better afford to be slack with our farming than they; and yet with *us*, this kind of farming is not just the thing to pay well. And if high tenant farming in England pays so well, why is it that so many of them are discontented, and wish to emigrate to this land of "slack farming and improvidence?" It must be to avoid these high taxes and enormous rents.

From a Parliamentary Report, it appears that there are in England now sixteen millions of acres of barren land, which might easily be made productive; but before they can be made to pay, they are covered with tithes and taxes. If we mistake not, the late Henry Colman says: "If the barren land of England could be brought into as high cultivation as some of the best counties are now, it would support the present population, crowded as it may be." But to return to "English high farming," (and without doubt this system is carried to a greater extent in England than in any other country,) that the "*soiling system*," or cutting all the food and feeding it to cattle in stalls and stables, is practised to some extent, both in England and in Scotland, may be correct; but that the mass or majority of our "high farmers" practise this plan, we have no good reason to believe. Be that as it may, we are satisfied that the "soiling system" can never be made practical in this country to any extent. It is only near the large cities and towns, with a few acres of land, that this is practised; and even there, it would require more time than most men would give it. It would be well for every farmer who has different kinds of soil, to have his soil analyzed on his farm by a good agricultural chemist, as this may be done at a small expense.

The truth is, Professor Mapes depends a great deal too much on his "chemical knowledge," and not half enough on a thorough practical knowledge in farming, to succeed. He says in substance, "Let no man attempt [high farming] who thinks a fact becomes a falsehood by having it printed, and he must even read books enough until he can answer the following questions, &c." "Do plants receive the whole of their nourishment from the soil, or part from the atmosphere? and how much from each? Do those elements from the atmosphere enter the plants above or below the surface of the soil; and if in part below, what conditions of the soil are necessary for their reception? By what means are these conditions of the soil to be obtained? How does moisture affect the vegetable economy? To what depths will the roots of plants enter the soil if properly prepared? To what depth do the solutions of manures penetrate the soil; and if not to an indefinite depth, why? In what manner and from what causes do plants receive the constituents of manures below the surface of the soil? Of those solutions of manures

which filter downwards, what portions are lost to plants? Of those which rise as gases, what portions escape into the atmosphere without being absorbed by plants, and why? What modes may be adopted to arrest them until the plants can make use of them?" We tell Professor Mapes, in a few plain words, that no agricultural chemist in this country or in any other country can answer these questions in the strict sense of the term, because no chemist can take these questions and carry them out into the field with the practical farmer, and apply them and make them work satisfactorily. They may make them read very well on paper to the uninitiated, but those farmers who have had much practical knowledge, and who are governed by common sense, pass them by as being of no particular consequence. For one, we are perfectly willing that Professor Mapes should make just as many scientific farmers by reading a few books, giving a course of lectures, analyzing some soils on their farms, &c., as he may choose; but we know well that no thorough-going practical farmer can be made in any such way as that; for it is only after a long series of years of diligent practice and study, that a farmer can be successful in this business. The analyzing of his soil is only a small part of a farmer's process. There are ploughing, harrowing, hoeing, sowing, mowing, planting, all to come in their turn, and of these it is necessary that they should all be done in the best manner. There may be some men, who, having made a fortune in other business, have retired to a farm, and have made thorough-going, practical farmers, having previously made themselves acquainted with the business by reading agricultural books and papers; but this only forms the exception, and not the rule. Of those who thus retire from business to a farm, we believe that six fail where one succeeds; and the reason is, they have not got the thorough practical knowledge necessary to carry on the business, and so, after a few years of trial and disappointment, they leave the farm in disgust for the town or city. They are, in fact, experimental "book farmers" on paper, without the necessary practical knowledge, and so, of course, they make a failure of it. That some men will learn more on a farm in five years' practice than others will in fifty, is true; but this only forms the exception, and not the rule. Generally speaking, only those farmers who have made a life-business of their calling, with their minds made up for all improvements that come within their reach, are really successful. In all that the Professor says about laying out money on land for improvements, instead of bond and mortgage, we agree with him, and we have maintained that doctrine for years; and that a system of high farming will pay in this country a great deal better than in any other, we are well satisfied. But that this can be brought about by a few experiments in analyzing the soil, and applying some special manures, &c., we do not so readily believe. These may be all necessary, but the best "consulting agriculturist" that the farmer can consult, is his own practical experience, together with his agricultural books and papers, always obtaining all the useful information he can, touching his business, from whatever source it comes. But Professor Mapes will pardon us if we tell him in a few words that we think that he makes "thorough practical farming" too much of a sing-song operation; that is to say, that any man, whether in city or country, after going on with a few "analytical experiments" in the soil, and a little practical knowledge, can go on successfully. And another thing we believe; that is, the Professor makes a great mistake when he makes use of so many chemical terms in talking to farmers. When he talks to a chemist of his own cloth, he is understood, but plain farmers want every thing told in plain language, making use of as few chemical terms as possible. When farmers read "scientific articles," if they are obliged to go to a *Chemical*

Dictionary to find out the meaning of the words, most of them will give it up as a bad job, although we are not sure but that some such training would be best for them, after all. If by this method they could be induced to study, it might prove of benefit to them.

Derby, Ct., April 19, 1852.

L. DURAND.

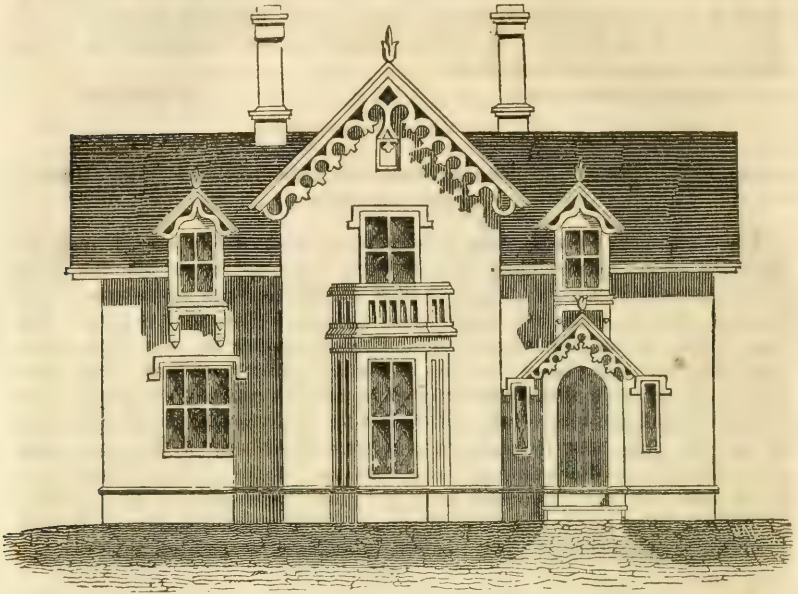
HOW BRITISH FREE TRADE PROFITS THE FARMER WHO HAS TIMBER TO SELL.

UNTIL recently, Great Britain, in recompense to the colonies for denying to them the advantages resulting from bringing the consumer to take his place by the side of the producer, gave to their products certain advantages in her markets; but such has now ceased to be the case. The result is seen in Ireland, whose agricultural product diminishes from year to year, and whose population has fallen below the point at which it stood more than thirty years since. On this side of the Atlantic, it is seen in the enormous increase in the import of Canadian lumber, the old market for which is now closed, by reason of the vast mass that is poured into it from the North of Europe, forcing down the price so far below our own, that the people of Canada are compelled from year to year to look more and more to this country for a market, granted to them by the act of 1846, under which a nominal duty of twenty per cent. is converted into a real one of little more, we believe, than five per cent.

The London *Times* congratulates its readers upon approaching prosperity *as a consequence of the low price of every description of produce*—to wit, cotton, tobacco, sugar, rice, hemp, lumber, &c., &c.; but how far low prices, consequent upon a necessity for forcing upon *the constantly diminishing market of England* so large a portion of the raw products of the world, are to bring prosperity to the growers of those products, we must leave to our free-trade friends to explain. Meantime, we commend to the perusal of such of our agricultural readers as have timber for sale, the following extract from one of the late British circulars, in which is described the manner in which *British* free trade affects the lumber-producers of the world:

"After the opening of the Navigation Laws, and the recent reduction of the discriminating import duty, it was not easy to foresee the operation of these almost simultaneous changes, and doubt hung over the future. Whether the wood of the North of Europe would displace the colonial or a large portion of the present supply? Whether our consumption, which had remained at a reduced average since 1847, would now increase? And, if so—as the supply had diminished in rather a larger ratio than the consumption—whether supplies could be increased without a rise in price sufficient of itself to check consumption? *Cheapness has solved all doubt and dispelled the cloud of uncertainty; the North of Europe has yielded such abundance, that the English consumer gains, in a broad sense, more than the difference of reduced duty and cheaper transit.* British America continues to have her large export in wood, with some variation in sorts and markets, participating in the transport at lesser freight through the influx of United States and other foreign ships in her waters, and still retaining the better half of Great Britain's wood trade; while home interests have prospered through all these changes in obtaining the unrestricted supply of *cheap wood*."

"From the foregoing report we are justified in concluding that the year 1851 has widely expanded the trade in wood; that while the colonies have increased their supply in proportion to our wants, the greater extension of the European supply has thereby given the full advantage of *reduced import cost* to the consumer of the United Kingdom. If from the too sudden augmentation in the supply of the produce of Prussia, and of some parts of Sweden, *loss has been sustained by the growers or shippers, to the same extent that loss is for our benefit here*, not only by cheapening wood, but by stimulating consumption, with abundant supply in reserve to meet the growing wants of the community."



VIEW OF FRONT ELEVATION.



VIEW OF GROUND PLAN.

COTTAGE DESIGNS.—No. V.

In the present number of the *Plough, Loom, and Anvil* we present our readers with the elevation and ground-plan of a cottage erected in the vicinity of New-Haven, Connecticut, beautifully and tastefully executed in the light Gothic style of architecture, and combining simplicity with elegance, convenience, and economy in its construction. This cottage is a good specimen of the arts of design and architectural taste, and is admirably adapted to the wants and convenience of a moderately sized family. It is constructed of wood, the sides being covered with the best clear white pine boards, one inch thick and four inches in width, smoothly planed, tongued and grooved, and the joints carefully and thoroughly filled with white-lead paint as the covering is put on. The roof is shingled, but it may be covered with felting, canvas, or paper, well coated with mineral paint, or otherwise, if desired. The principal story is ten feet in the clear; the chambers, eight feet six inches, with the exception of one corner in each wing, which is cut off by the roof. In the ground plan, A is the entrance-hall, occupying, with the stairs, twelve by fourteen feet, opening into the parlor B and dining-room C, each fourteen by eighteen feet in size; and also (if desired) communicating with the kitchen D, which is twelve by fourteen feet. E is a bed-room, fourteen by fifteen feet, and F a library, eight by fourteen feet. I is a small back passage with a closet, and K the dining-room closet. H is a pantry, and G an entry or sink-room communicating with the kitchen. It will be seen that there are no fire-places either in the parlor or dining-room, the building being warmed by a hot-air furnace in the cellar; but it can be conveniently warmed with stoves if the furnace is not desired. A building of this description, well and neatly finished, can be erected at an expense of about twenty-four hundred dollars.

DESTRUCTION OF CATERPILLARS AND THE PEACH WORM.

To the Editors of the Plough, the Loom, and the Anvil:

I TAKE leave to communicate for your invaluable journal the following prescriptions for the destruction of caterpillars, and the prevention of the depredations of the peach worm.

FOR CATERPILLARS.

Apply coal-gas tar with a painter's brush, inserted in the end of a long, light pole to the nests, on their first appearance. This tar is so obnoxious to caterpillars that a single application expels them from their nests for the season. I have used this remedy frequently, and never knew them to rebuild, as they will after almost every other application.

FOR THE PEACH WORM.

Apply common tar, that has been boiled until it becomes pitchy, to the stalk of the young peach trees *before the worms have entered the bark*. In planting a young orchard, the tar should be applied before the trees are put in the ground, from the junction of the root and stalk some nine or ten inches upward. This application should be repeated annually, by removing the earth near the body of the tree, and applying the tar, not hot, but warm enough to be put on with a brush or swab. It may be observed that the peach worm, whether hatched from an egg, deposited on the leaf, or the tender

branches, finds its way to the body of the tree near the ground, where, if there be any gum exuded, it finds its nourishment, and then penetrates the soft radical bark, under which it is protected effectually from lime, ashes, soot, and every other application that I have known to be tried. The tar forms a pitchy coat, that effectually prevents the worm from entering the bark. It also averts those slight casual bruises near the root, from which the gum exudes that nourishes and protects this mischievous pest in its infancy. This application of tar will also prevent mice and rabbits from eating the bark off young fruit trees. Having fully tried these applications of tar, I can recommend them with entire confidence.

S. D. INGHAM.

Trenton, N. J.

MODE OF FARMING IN ENGLAND.

DRAINING LAND—MANURING—STACKING OR MOWING—LIVE STOCK—ENGLISH
HAY—GREEN FODDER—FATTENING CALVES—THE DAIRY.

To the Editors of the Plough, the Loom, and the Anvil :

HAVING described in my last the method of cropping and tillage in many parts of the old country which came under my own personal observation, as well as practical experience, I wish now to call the attention of your readers to the great extent and usefulness, as also the manner in which draining is performed.

It is a correct idea in England, and holds good universally, that wet lands wash away and exhaust the virtue of whatever manure you put upon them, and therefore by draining them you doubly enhance the power of the manure to benefit the soil, besides keeping the land in a condition that preserves the seed from rotting, and prevents disease, which so frequently attacks the crop upon a wet soil.

There are three methods of underdraining in England; these are called spade-ditching, tile-draining, and lastly, mole-ploughing. The first, spade-ditching, is the oldest and perhaps the cheapest. In this method a plough is first used, making a trench as deep as you can by running it twice in the same place. Then a man uses a long, very narrow spade, not more than one inch wide at the point, and perhaps eighteen inches in length; with this a deep trench is dug in that already drawn by the plough, and then round and straight faggot wood is laid in with straw and afterwards filled up with earth; the water finds its way below or among the wood in the trenches, and keeps the land dry a number of years; and the eye of a practical farmer watches to see if any of the ditches become stopped so as to inundate the ground, and then, by opening the old drain and mending it, he finds, by acting out the old adage, that "a stitch in time spares nine."

Tile-draining is perhaps more expensive, but lasts much longer. The ditches have to be made wider, and at the bottom of them is laid a row of flat tiles, made of brick-earth, of about one foot in length, four or five inches wide, and one inch in thickness; upon these are placed tiles bent in the form of half a circle, and the open part laid upon the lower row of tiles. These upper half-circular tiles are perforated with holes, through which the water finds its way, and drains the soil above them.

The last method of draining, called mole-ploughing, from its working in the ground something similar to a mole, is done by a horse winding a chain round a windlass; the plough, which is a strong wooden frame, has on the lower part of it a circular iron roller attached, about two inches in diameter,

which leaves behind it in the ground an open space of its own size, as the chain is wound up upon the windlass. This method of draining will only answer upon stiff, loamy soils, as upon light, sandy ones, the furrows or drains would break in and become choked. This is at first an expensive mode, but it is the most expeditious. Nothing in England is thought of so much importance as draining wet soils; and capital expended in this manner always returns an interest that amply repays the investment.

Another precaution in England that lands may not be impoverished, is not to sell either hay or straw off the premises, but to have it consumed at home; or if any is taken away, an equivalent is returned in the form of manure. Barley-straw, of which so much is grown in England, is excellent fodder for cattle in the winter, and the farmer always makes it a point to get his whole produce of straw eaten or trodden out by the return of spring, that it may be used for manure upon the land in the fall of the year.

Great care is practised in the preparation of manure, that it should be well mixed, and of a proper age when drawn from the yard. It is generally allowed three to six months before it is used, and during that period it is stirred two or three times, that it may be well matured, and benefit the land as soon as applied. To draw raw manure and put immediately upon the soil, as is often done here, would, to an old-countryman, appear very injudicious. Nothing would surprise an American farmer more than to see with what expedition large fields are covered with manure in England. Three carts, or tumbrels, as they are there called, are generally used, and a man or boy at each of them, so timed that one is at the manure-heap filling, another driving away, and the third unloading. The cart is made to turn down, and dumps out the manure in heaps, as throwing it out by hand would be too slow; the horse walks forward and leaves a certain proportion of the manure in hills at equal distances.

It is a most gratifying sight, after harvest, to see how beautifully and almost symmetrically the produce of the year is put up in large stacks, which are always thatched with straw, that no part may be injured by the weather. An English farmer's barn is not supposed to hold, perhaps, one half his produce; a lot is always appropriated for stacking, and the produce thus kept out of doors and threshed in the spring is always in better condition than that which has been housed in a barn, and commands a better price in the market.

As there is no maize grown in England, by reason of the climate, except a few ears in the gardens, as rarities, this species of produce is supplied by peas and beans, of which an immense quantity are raised. The pea generally grown is the gray partridge, which is of a hardy nature, and may be sown very early; in some instances it has been planted in the fall, and stood through the winter without much injury. This vegetable is mixed with barley, and makes good food for hogs, although too many would be considered injurious, by reason of their heating nature.

The varieties of beans grown are two, called the tick and the mazagan; the latter is of a reddish hue, and somewhat larger than the former, which is of a brown color. These are often broken for horses, and are esteemed very hearty and strengthening. They are also often given to hogs, much in the same proportion as peas are. Buckwheat, or *brank*, as it is there called, is never grown for cakes, nor did I ever know of their being eaten there. Sometimes it is sown, and left to fall upon the ground as food for the game during the winter, or it is used with other produce in the fattening of swine: but this is a grain but little cultivated in the mother country.

It is generally admitted that the English are pretty good judges of live stock, and perhaps no country shows a greater superiority in care of breeding, the selection of handsome and symmetrical forms, and especially in the treatment and attention when raising them.

The great semi-annual fairs for cattle which are held in various parts of the country, always give an impetus and emulation among the farming interest, which create an increased interest to excel in the various animals which are then collected for the public to inspect and purchase, to add to and to improve their own stock at home. And here, if there is any profit to be derived from a wealthy aristocracy, it is brought to bear upon the good of the community. Noblemen and titled gentry emulate each other, not only in raising the very best qualities of corn and grain, but their abundant means enable them to try and adopt the most expensive experiments, and their results are published, and thus made available to all classes of the community. Especially is this spirit seen in the breeding and rearing of all descriptions of cattle; and many varieties, which become celebrated, go under the name of the aristocratic individual by whose patronage and expense they have become famous. George the Third spent a great part of his time, when he could get away from his high official duties, upon his farms, and his sheep were always known in the market, and noted for their superiority.

It is true we have roast beef and plum pudding in America, but an Englishman finds, when he crosses the Atlantic, neither the one nor the other is exactly what he has been accustomed to at home. The fact is, the old gentleman, John Bull, is a sober, plodding fellow; he may be slow, but he takes care to be sure, and keeps his eye on the main chance. He takes care to give his bees sufficient time to consolidate their meat before they are brought to the slaughter-house; and as for his plum puddings, the season he allows them for boiling, a Yankee would think a great waste of time, and not at all compatible with his notions of haste and expedition.

The writer has sometimes felt puzzled when observing the difference in the quality of the hay between this and the mother country. Most of the pastures and meadows there are very old, and the older they are, the more are they valued: the thickness and richness of their bottoms are surprising, and when the fall is open, cattle graze and fatten upon them rapidly. Timothy, doubtless, makes good and hearty hay, but in England it would be thought too stiff and coarse. There is not the prejudice there against feeding horses upon clover hay; many farmers prefer it. It is not so dusty, which perhaps may be accounted for by the heat not being so great as to sear up the leaf. Clover, when mown, is not spread out, but lies in the swath till well dried; it is then turned over, left afterwards to heat upon the cock, and then stacked out of doors, which renders it sweeter than when housed in a barn.

Green fodder is extensively used, and the *vetch*, or tare, as it is there called, is grown for that purpose. This is often sown in the fall, and is cut the following May and June, and produces a great quantity of nourishing food, which is given to cattle in the yard, and thus has the advantage of keeping the stock from being breechy, and collects the manure in one place, instead of being wasted in useless locations upon the farm. Rye is also grown to a considerable extent, to be fed off early in the spring by sheep with their lambs, before the grass and clover are forward enough to pasture.

Nothing is considered so rich for sheep, and upon which lambs especially thrive so well, as the Dutch, or white clover. In England, whole fields are sown with it, and when the bloom is going off to seed, it is reckoned the most profitable herbage upon which they can graze.

The fattening of calves is there also carefully attended to. They are never suffered to run at large with the cows, but always penned up, and the floor of the pen is always raised two feet or more from the bottom of the cow-house, that it may be always perfectly dry. Chalk is also placed in the pen in large lumps for them to lick, as it is supposed to add to the whiteness and delicacy of the meat. Calves are not often killed under the age of two months at least, and sometimes they are kept much longer. Cows when milked are generally stalled up, their heads being secured by two upright wooden bars, which separate to admit the cow's head, and then approximate so as to prevent them from drawing them out again. The large Durham cow is preferred perhaps upon extensive farms, but the small Suffolk breed is chosen by farmers of lesser occupations.

The dairy is generally considered the most profitable part of the farm's produce, and for this business no meadows can be better adapted than the rich ones of fatherland. The deep yellow flower called the buttercup, (*ranunculus bulbosus*), when in full bloom in May, gives the meadows a rich, luscious appearance, which ravishes the eye, and raises in the mind thoughts of golden rolls of butter, and the highly flavored cheeses of Cheshire and Stilton.

In our next article we propose to give an account of the expenses of English farming, in the form of taxes, tithes, and poor-rates, which many Americans cry out so indignantly against; and yet the subject is but partially understood in this country.

AGRICOLA.

Madison, N. J., March, 1852.

TENDENCIES OF THE TARIFFS OF 1842 AND 1846.

THE tendency of the tariff of 1842 was towards the promotion of the importation of foreign raw materials, to be combined with those of domestic growth, and converted into the forms fitting them for consumption by the labor of men who should eat the food grown in Illinois and Indiana, Iowa and Wisconsin; and how vast is the effect of such a policy upon the interests of the farmers, may be seen by the following statement of the manufacture of the single article of India rubber:—

Some idea may be formed regarding the great extent this manufacture has already attained, from the following rough calculations: Manufacture of shoes, about 4,000,000 pairs; of car-springs, about 300,000 lbs.; of steam-packing, about 250,000 lbs.; of machine-belt, about 200,000 lbs.; of clothing and various other articles, about 200,000 lbs.; of rubber cloths, about 100,000 lbs.; for other purposes, about 100,000 lbs.

The tendency of the tariff of 1846 is that of prohibiting the import of foreign raw materials, and compelling the export of our own in the most bulky shape, to be converted by men who eat the food of Britain, Poland and Russia; and thus it is that the farmer brings about a state of things that reduces the price of wheat to fifty cents a bushel. "The agricultural and planting interest of the nation have determined," says a contemporary, "to import their cloth and iron. It is of course proper to export cotton and corn to pay for them. This can only be done by reducing their price so low, that they can be exported at a profit." The lower the price, the more will go abroad; the poorer our people, the less they will consume, and the lower *must* be the price; the lower the price, the larger will be the quantity for which we *must* seek a foreign market; and the larger the quantity of exports, the greater (according to the Manchester system of political economy, adopted by Mr.

Walker) will be the prosperity of the nation! It is time that the planters and farmers should see that, blind themselves, they have permitted themselves to be led by the blind; time, too, that they should open their eyes to the fact, that *British* free trade has ruined every community ever obliged to tolerate it.

[COMMUNICATED FOR THE PLOUGH, THE LOOM, AND THE ANVIL.]

LETTER TO THE HON. RICHARD BROADHEAD.

MONTOUR IRON WORKS, PENNSYLVANIA, *April*, 1852.

Hon. Richard Broadhead, U. S. Senator for Pennsylvania:

DEAR SIR: I have been much disturbed by the recent movement in the House of Representatives, to repeal the duty upon Railway Iron, which would be most disastrous to the best interests of the country, and utterly annihilate and destroy the great Iron Trade of our State. It would seem as if this great trade, second only to Agriculture, as a branch of National Industry, was constantly to be the sport of legislative change and experiment. When the Bill of 1846 was presented to the country as a Revenue measure, Secretary Walker, in his Report, held the following language: "Stability in the Tariff and Currency is what the Manufacturer should most desire. Let the Tariff be permanently adjusted by a return to reasonable and moderate Revenue Duties, which, when imposed truly and in good faith for that purpose, will yield sufficient advantage to afford reasonable profits; and let this *permanent* system (and none other can be permanent) be established, and the Manufacturer, in a series of years, will derive the greatest benefits from the system. The Tariff has been changed and modified thirty times since the first bill, being more than once on an average for every Congress since the Government was founded; and it is vain to expect permanency from any thing but a *Revenue* Tariff. Stability is what the Manufacturer should desire, and especially that the question should be taken out of the arena of politics, by a just and permanent settlement." In a more recent Report, Secretary Walker admitted that Iron would bear a much higher duty for Revenue than *that* imposed by the Bill of 1846, and recommended a duty of forty per cent. *ad valorem*. At the time of the passage of the bill of 1846, Railway Iron was selling in England at £10—say \$50—and consequently paid a duty of \$16 and upwards per ton. This, then, was considered the *lowest Revenue Duty* by Secretary Walker. Railway Iron is now selling at £4 10s., (\$22.50,) and pays a duty of \$6.75 per ton. It has been admitted by all parties that the Iron Trade has been the great suffering industry under the Bill of 1846, and so declared by the Chairman (the Hon. Mr. Bailey) of the Committee of Ways and Means of the last Congress.

This movement in Congress is more alarming, from the fact that it is sought by a combination of other interests. The proposition is to bargain away the Railway Manufacture for an *increased duty* upon the other descriptions of Iron, and upon the finer fabrications of Cotton, etc., and thus, by dividing and separating the interest, eventually to destroy it. Such discriminating duties as are proposed in favor of other descriptions of Iron, would determine every operator to the production of those, and, by thus overdoing the business, bring immediate embarrassment and ruin upon all engaged in the trade.

Now, if we examine in what the consumption of Iron chiefly consists, and in what the increase will be most considerable and most likely to continue, we cannot fail to be impressed with the magnitude of the consumption in the construction of Railways. Every mile of Road demands upwards of 100 tons

of Iron for a single track, and these massive rails are to be stretched from one limit of the country to the other, East and West, North and South, and in every direction, wherever trade and travel call for them.

For any statesman, therefore, under such circumstances, to entertain the idea of an importation, *free of duty*, of a *material* so largely used, and to be entirely dependent for it upon a foreign country, is totally inadmissible. Who has ever heard of such a commerce with any nation, and what nation could sustain itself under it? As well might a country like ours, with its rich and fertile fields, encourage the importation of its breadstuffs; the latter would not be more disastrous to the best interests of the country. What items of exports are to counterbalance and furnish the returns for such a trade of imports? Not even State Bonds are proposed; but Railway Securities, County, and Township, and Town Bonds. Can any statesman look back to the period of Railway mania from 1830 to 1840, and encourage a resort to such negotiations?

The State Stock issued from 1830 to 1840, reached the enormous sum of.....\$173,409,084

But the excess of imports ran far ahead of the issue, being from 1829 to 1840,..... 207,664,725

The success of one scheme, or project, in negotiating Bonds, was only an incentive to others of more magnificence and splendor, *little*, if any, regard being had to the productiveness of the work. Ought not, then, the strong temptation which now exists (with the experience of that day to guide us) to negotiate such securities for Iron abroad *be checked*, instead of encouraged? thus further depreciating American credit, adding to our foreign debt, degrading ourselves in foreign estimation, and forfeiting our real independence.

But what sound argument can be used for the remission of these duties? Is not Railway Iron at the lowest figure that it has ever reached? and would not its repeal take from the Treasury at least *two millions of dollars per annum*? If the Revenue is in excess, would it not be more conducive to the best interests of the country to remove entirely the duty upon that class of articles entering into the consumption of our farmers and planters, such as the Iron for houses and roofs of houses, posts and fences, railings, boats, plough-shares, ploughs, scythes, waggons, etc., instead of remitting Railway duties to incorporated companies, which are usually owned and controlled by a few individuals? Would our agriculturists submit to such an augmentation of duties as would restore the amount remitted to the Treasury?

Is it not now contended by any one conversant with the trade, that we have not the skill, the resources, and the ability, to increase this trade to meet the entire wants of the country at a *price that is remunerating to the English Iron Master*. For it is well known, and openly admitted by the Iron Masters of England, that all the Iron now sold (although produced by labor at the starving-point) is at an *absolute loss*. To be satisfied of this, it is only necessary to refer any intelligent mind to the English *Mining Journal*. It would be supposed that the low figure at which this Iron is now obtained, with the diminished cost of construction, arising from the experience of those who have pioneered in these Railway undertakings, and with the enormous grants that are daily made by Congress of Lands, would satisfy these grasping companies, without sacrificing millions invested under the guaranty and faith of the Government. But although such legislation would have the immediate effect of destroying the Railway manufacture in this country, yet we shall undertake to show that it would not enable the companies, in a period of five or ten

years, to procure their Iron at as *low a price as now*, but it would be largely enhanced by destroying the American establishments. To illustrate this, I shall furnish the most conclusive facts.

From 1832 to 1842, Railway Iron was imported free of duty, and what was the result? Prices :

In England, Railway Iron, in 1829, commanded only	£5 10s.	\$27.50
1830, “	5 10s.	27.50
1831, “	5	25.00
“ “	4 15s.	23.75
1832, duties remitted, . .	6 17s. 6d.	34.73
1833, “	7	35.00
1834, “	8 5s.	41.25
1835, “	11	55.00
1836, “	12 10s.	62.50
Decline of American Trade, 1837, “	10 7s.	51.75
1838, “	11 2s.	55.50
1839, “	11 2s.	55.50
1840, “	11 17s.	59.37

And this with an increase of the Iron business of England, during the same period, of fifty per cent. Now, it will be perceived from these prices, that the article, in the infancy of the Trade in 1831, was furnished at the low figure of £4 15s. (\$23.75;) and with a duty of \$27 per ton, was imported into this country for less than in 1836–1837, when no duty whatever was paid. The foreign manufacturer, having entirely the control of the market, prescribed his own terms, and put into his pocket the difference, \$27.00 per ton, instead of paying it into the Treasury of the United States. It went to enrich the English Iron Masters, and to sustain foreign labor and capital, and with the loss of upwards of \$4,000,000 to the Treasury.

It was our demand for Railway Iron that produced that price. The English *Mining and Railroad Journal*, in June, 1843, remarks—the price of Railroad Iron being then £4 10s. per ton—“That the demand for Railroad Iron in this country (England) is comparatively trifling, while America, which, in 1839, took nearly one third of our exports, now, from the uncertain state of the tariff, and *loss of credit*, does but little to assist us; and this is the only foreign country to which we can look, as being of sufficient weight to have any effect upon our home market.”

The production of Iron in Great Britain is estimated at two millions of tons, and she consumes about one million and a third of tons: this leaves 666,000 tons to be exported to all the rest of the world, including her colonies. We have taken this year (fiscal) of that surplus, 341,750 tons; 171,938 tons of which have been Railway Iron. Duty on the latter, about one million and a half of dollars. Our consumption, according to the late Report of the Secretary of the Treasury, is 754,000 tons, and we are now manufacturing 413,000 tons. Suppose that we should call upon that market annually for one half of the Iron which we now manufacture, would not prices advance higher than they did in 1847? The present low price is not the result of improved machinery and skill introduced into the business, (as a reference to the prices of 1831 and 1843 will show,) but a surplus stock in market.

In June, 1843, our *credit* was literally gone. Our State Bonds would no longer pay “for our imports, and those imports” had drained the country of all its resources. The Tariff of 1842 was passed, and brought into life and existence some splendid railway establishments, that will compare favorably

with the best of the English concerns. These establishments were, the Montour Iron Works, at Danville; the Wilkesbarre Iron Works, at Wilkesbarre; the Phoenix Iron Works, at Phoenixville; the Great Western Iron Works, on the Alleghany river; the Scranton Iron Works, in Luzerne county; the Safe Harbor Iron Works, in Lancaster county; all in Pennsylvania. The New-Jersey Iron Works, at Boonton; the Tredegar Iron Works, at Richmond, in Virginia; and the Mount Savage Iron Works, at Cumberland, Maryland. These Works were built for the manufacture of Railway Iron, and it was most fortunate that the long-sought discovery of using the anthracite and bituminous coals of our country as the fuel, should have concurred to render those fuels available at this time. Every preparation was therefore made for an extensive and rapid production of this iron. To form an idea of the vigorous impulse thus imparted, there was invested, in Pennsylvania alone, the enormous sum of six millions and upwards in this trade, from 1843 to December, 1846.

These works, I say, (with the exception of two,) were erected exclusively for the purpose of manufacturing Railway Iron, under the pledged faith of the government; for the *mineral coal* could only then be used profitably for iron of that description. It was the wide field which this branch of business opened, that attracted the enterprise and capital of the country. For every man became satisfied that the only way to secure to the country an extensive construction of solid, permanent, and safe railroads, was to manufacture the iron at home. We had, it was true, those croakers who contended that we had neither the skill, capital, nor enterprise, to manufacture this iron, and that we must continue, for years to come, our deplorable dependency upon England. But what has been the result? In the fall of 1845, two extensive railway mills were completed, the Montour Iron Works, at Danville, Pennsylvania, and the Mount Savage Iron Works, near Cumberland, Maryland; both of them manufacturing from the ore into the finished bar, and each capable of supplying 10,000 tons per annum. The first bar was made the fall of that year; and so rapid was the advance of iron in England, from the prices of 1844, of £5 per ton, that the Mount Savage Iron Works were furnishing it to the Fall River Company, in Massachusetts, for \$59 per ton, when the price was more than that in England. The railway mania in England commenced in 1845, with iron at £7, and on April 1st, following, it was £10.

It averaged during that year,	-	-	-	-	-	-	-	£ 8 10s.
During 1846,	-	-	-	-	-	-	-	10 00
" 1847,	-	-	-	-	-	-	-	10 10

The prices of 1846 and 1847 gave a rapid and vigorous impulse to the business here, and by 1847 we were manufacturing equal to the entire wants of the country, about 70,000 tons per annum, and all this accomplished in about three years. We challenge the world for a like result in any other branch of business. This iron was manufactured almost entirely from mineral coal, a *fuel* that, up to that time, was unavailable for manufacturers. The pioneers of this business had not only to fight this stubborn fuel and master it, (particularly anthracite,) but to acquire all the skill and build all the machinery necessary for such vast works.

But they fought industriously, succeeded, and were rewarded in 1846 for their capital, thought, science, and labor, in maturing and perfecting this business, *by a reduction of the duties to a revenue standard*. In 1847, the railway mania in England ceased, the bubble bursted, and hence the over-produce-

tion of that country, stimulated by the high prices of two years, threw upon us their surplus stocks at most ruinous prices. Against these surplus stocks and ruinous prices we have been contending; and it is now proposed, after all that has been accomplished by those engaged in this business, to annihilate it by *special legislation*.

If special legislation was justifiable for any purpose of trade, it ought to be invoked for this business. It is now sought and pressed for your steamships; *how* are they to compare in national benefit with the manufacture of railway iron? It is a manufacture to which no limit can be fixed in a country like ours, and that country surpassing any other country upon the face of the globe in the quality and abundance and variety of our iron ores and fuels. These materials, too, existing in *every section of the Union*, and admirably located, as well in respect to the combination of the crude materials to be wrought, as to the distribution of the iron manufactured in every direction through our internal improvements. Does not good policy, therefore, dictate, and every intelligent citizen desire, that our entire consumption of iron should be henceforth from our own production? No one can doubt, if the trade is encouraged, that iron will be produced for most of the roads as *cheaply* at home as abroad, on an average of years, and the debt thus created be a debt due to our own citizens, and not to foreigners. What must, sooner or later, be the result of the ruinous drain upon our resources, by importing this iron from a foreign country? Inevitable bankruptcy!

But we assert that we are now manufacturing and furnishing the iron *cheaper* than the English, if the *quality* of iron has any value. There was a day when that was highly estimated in this country. England now pays Russia and Sweden *three times* as much for their iron as her own sells for, to be used in the finer fabrications of this metal; and the day is fast approaching when our railway companies will find the *English iron* as worthless as most of the *securities* which they offer in payment for it. Experience has shown that the difference in value between English and American iron, according to the experience of the Reading Railroad Company, which road is doing a larger business than any road in the country, is *thirteen dollars and fifty cents* per ton in favor of the latter. A letter from the engineer of that road to Mr. Tucker, the president, will be found in the late January number of *Hunt's Magazine*. This experienced engineer remarks, "That the iron used in English rails has, for the last *five or six years*, *materially deteriorated*, a very inferior quality of the metal having been substituted for that formerly employed; so that, though the first cost (being about four dollars per ton) of American rails is greater than that of imported English rails, yet, in the long run, the use of American rails proves to be cheaper and more economical, (by thirteen dollars and a half per ton;) and any process of legislation that would favor the employment of American rails instead of the English, though it might add to the first cost of the road, would not increase, but diminish its permanent expenditures." The American iron within these six years, on the contrary, has improved *greatly* in quality. In the infancy of the trade, some inferior iron was made by our best establishments.

Under the hope that this move has originated in a misconception of the magnitude and importance of this trade to the labor and wealth of the country, and of the capacity and ability of our works, at *fair prices*, to meet the entire wants of the country, I remain, with respect, &c.,

THO. CHAMBERS.

[COMMUNICATED FOR THE PLOUGH, THE LOOM, AND THE ANVIL.]

A COMPARISON BETWEEN THE OLD AND IMPROVED MODES OF
TREATING FLAX.

BY ALLAN CAMERON, NEW-YORK.

FLAX is one of the most ancient, if not the very earliest material spun into threads. The mummy-cloth of Egypt, chemically and microscopically examined by Dr. Ure, was ascertained to be wholly composed, both in warp and woof, of flax, and contained no cotton whatever. Though cotton was first spun in Egypt, and was certainly spun at an early period, it was much later used than flax for the purpose of making cloth. We may indeed infer that the art of spinning must have made considerable progress before cotton was spun. No doubt the art took its rise from plaiting the stalks of the flax together, and from plaiting them to twisting them together to make a long thread. The downy nature of cotton would not be likely to suggest the possibility of twisting it into a string, till that art had been learned by twisting together the long, visible, natural threads of flax. Similar arguments are equally applicable to wool; so that we may infer that flax was spun before either wool or cotton.

After being applied to making cloth upwards of three thousand years—the same means having been used for preparing it for this purpose for the whole time, without much change—an improved method of preparing flax has lately been introduced, which will ere long supersede the old and unhealthy process of rotting. From the nature of flax, considerable difficulty is experienced in spinning it by machinery; and the greater facility with which cotton can be spun in this way, is the principal reason why cotton cloth has come so extensively into use, and, in many cases, taken the place of linen. The peculiar properties of the latter, however, must always make it acceptable, particularly in warm climates, to a great portion of the community.

Flax cultivation is no new idea in the United States. In the State of New-York alone, forty thousand acres of flax was raised in 1849. It seems strange that our farmers cannot overcome their prejudice in respect to the quantity of seed sown to an acre, and the proper cleansing of the seed as well as the soil, previous to sowing. In England and Ireland, the farmers are so particular as to the quality of the seed sown, that they seldom use any other but Riga seed, put up in barrels, branded with the name of the exporter.

The seed is sown broad-cast, in the ratio of about one hundred and fifty pounds to an acre, in European countries. It is then covered to the depth of an inch, and rolled or trodden down. The flax soon appears above the ground, and women and children are then employed in freeing it from weeds, which spring up with it. If the soil is properly cleaned previous to sowing, the weeding process may be dispensed with. When the plants attain a height of about thirty inches, and are beginning to present a yellow tinge at the bottom of the stem, they are ready for plucking. They are carefully pulled in small handfuls, and then piled in loose heaps in order to become partially dried, and afterwards are stored in stacks till further operations are required. The subsequent processes are very simple, however much care they may require. The plants are drawn through an open comb, which strips off the seed as they pass; and the seed thus separated by “rippling,” is used for making linseed oil, oil-cake, and other preparations, when suited for those purposes; but generally, the flax is pulled before seeding, as the fibre will be finer on that account.

The improved mode of treating flax requires the fibre to be ripened, and the pulling process can be supplanted by the scythe or mowing-machine. The seed, when properly cleaned, can be re-sown the following year, or used for crushing. A frequent change of seed is strongly recommended.

Before "Flax-Cotton" theories were dreamed of, growers selected one of two methods for extracting the gluten from the fibre, before separating the hair from the boon: *water-rotting* and *dew-rotting*. In the first method, the stems are steeped in water for a week or a fortnight. A fermentation ensues, which dissolves the gluten and loosens the fibres; but if this fermentation be not stopped exactly at the right time, the fibre becomes injured. In the second method, the stems are exposed for three, six, or even nine weeks to the action of dew, rain, and wind, on a meadow: the fibre is better, though more slowly rotted, than by the water or steeping process. Sometimes a double or medium system is acted on: water-rotting for one week, and dew-rotting for two or three weeks more. When thoroughly dried after rotting, the flax is *broken* and *scutched*. The stalks are broken or crushed by wooden levers, which are brought down forcibly upon them, and are then scutched or beaten in every part to separate the shoves from the fibre.

Recently, machines have been invented for separating the straw and the hair of the flax as it comes from the field, reducing the bulk 50 per cent., and the weight 25 per cent., enabling the farmer to reserve for his cattle a very nutritious food, and reducing the cost of transporting the fibre to market. The gluten or resinous substance is extracted from the fibre by the Chevalier Claussen process, by boiling in caustic soda for a few hours. It is "cottonized" by cutting the fibre in lengths of one and a half inches, when required for cotton machinery, and about three inches if intended for woollen machinery; afterwards steeped alternately in a series of vats containing a solution of soda, sulphuric acid, bleaching-powders, &c. When washed and dried, it is put through "devil-carders," and other machinery usually employed in manufactories. When completed, it resembles cotton so closely, that many cannot distinguish the difference.

It is very desirable that the flax-straw be kept even, as the breaking-machine will act upon it to better advantage, and it can be cut in more equal lengths for the cottonizing process.

As the patent-right for cottonizing flax has been purchased by several parties in different parts of the United States, no doubt quite a demand for flax-straw will be created during the coming fall.

COMPULSORY SUBSCRIPTIONS TO ROADS IN THE NAME OF FREE TRADE.

At the South-western Railroad Convention, the following resolutions were adopted:—

"1. That the system demands and would justify a liberal application of the resources of the States interested. 2. That individual subscriptions are inadequate to the accomplishment of works of such magnitude. 3. That the public lands ought to be liberally granted. 4. That such grants would greatly enhance the value of the neighboring lands. 5. That county, parish, and municipal subscriptions should be encouraged. 6. That interest on such subscriptions should be levied on landed estate, as being the property most benefited by the roads. 7. That such subscriptions should be distributed for individual supervision among the landed proprietors. 8. That Congress be addressed on the subject of granting lands."

We have here a repetition of the call upon Hercules for help, when it is

the wagoner himself that should put his shoulder to the wheel. Congress is asked to grant lands in aid of roads, whose only effect would be to attract population from other States already suffering from the drain that is now going on so steadily, when all might prosper if they could but learn to help themselves. It is population that gives value to land, and increased population that enables men to make roads; but that increase can never be obtained while the South shall persist in its determination to take every thing from the land and return nothing back to it. Let the people of the Southern States determine to make a market for food while bringing into activity their own great deposits of coal and iron ore, and let them convert their food and cotton into cloth, and they will then cease to need help from abroad. Let them do these things, and they will cease to entertain the idea of combining freedom of trade with compulsory subscriptions in aid of roads such as are here proposed:—

“RAILROAD STOCK BY LAND TAX.—The Governor of Mississippi, in his late message, has recommended a law imposing a tax upon lands within ten miles of projected railways, and that the tax-payers should receive a certificate of stock in the company to the amount paid.”

THE WAY FOR IRISHMEN TO AVENGE IRELAND.

MR. JOHN COSTIGAN is one of the most prominent and influential Democratic Irishmen in Albany. At the recent celebration of the festival of St. Patrick in that city, he expressed himself as follows:

“John Costigan, Esq., being called on for a sentiment, stated that he had quite recently read in the Tory London *Times*, the leading government organ of England, an editorial article on the consequence and effects of emigration from Ireland to America, from which he (Mr. C.) had transcribed the following paragraph, viz:

“When the Celt has crossed the Atlantic, he begins, for the first time in his life, to consume the manufactures of this country, and indirectly to contribute to its customs. We may possibly live to see the day when the chief produce of Ireland will be *cattle*, and English and Scotch the majority of her population. The nine or ten millions of Irish, who by that time will have settled in the United States, cannot be less friendly to England, and will certainly be much better customers to her, than they now are.’

“Here,’ said Mr. C., ‘is proof, positive and undeniable, if any were needed, of the kind of love and affection which the British government bears to Ireland and Irishmen, and the confidence they entertain of holding the United States as the *best market in the world* for their manufactured goods. Although he (Mr. C.) had always favored and supported the doctrine of “Free Trade,” and low duties on foreign importations, avowals like the foregoing, made from various British sources, he frankly confessed, had worked a change in his opinion on the “Free-Trade” policy, advocated so strongly in influential quarters. As an indication of his present views on that subject, he would ask leave to present the following sentiment:

“Protection to American Industry: The most legitimate and effectual punishment *we* can inflict on John Bull for his tyranny and oppression to Ireland. Let us have a tariff high enough to exclude the importation of *all* British manufactures.’

“This sentiment was received by the company with the most rapturous applause.”—*Albany Argus*.

Mr. Costigan hit the nail on the head. The Union deprived Ireland of the

power to protect her own manufactures, and made her the helpless victim of the system which England and Locofocoism call free trade. Before the Union, under Irish protective laws, there were Irish woolen manufactures, Irish carpet manufactures, Irish blanket manufactures, Irish silk manufactures, Irish calico manufactures, Irish flannel manufactures, and Irish stocking manufactures. The British Parliament decreed their ruin, and they are extinct. It decreed that Irishmen should buy their manufactures "in the cheapest market," meaning thereby, where they could, for the time being, be bought for least money, (that is, in England,) and that Ireland should raise bread-stuffs and other agricultural products with which to pay for them. England was to be the great work-shop, and the Irishman was compelled to be its customer. In short, it fastened upon Ireland, by coercion, the same system which it seeks to fasten upon us by coaxing. The Locofoco party, whenever it has the power, and to the extent that it has the power, adopts and promotes the British system. It insists that this country ought to look to England as its work-shop, and in this way obtain the privilege of sending its grain across the ocean to be eaten, instead of having it eaten at home. The Whig party maintains the American protective policy, the same policy precisely as Ireland maintained so long as it had the power. Before the Union, the Irish Parliament imposed protective duties on many English manufactures: among others, a duty on English woollens; a duty on English calicoes and muslins, so high as to be nearly prohibitory; a duty on English silk; duties on English cotton yarn, cotton twist, and cotton manufactured goods. Even in the Act of Union it stipulated for the continuance of the duties on woollens, and several other articles, for twenty years; for the high duties on calicoes and muslins till 1808, with a gradual reduction afterwards, till they should fall to nothing in 1821. The duties on cotton yarn and twist were in like manner continued till 1808, with a provision for their gradual reduction after that time, till they fell to nothing in 1816.

But when Ireland was deprived by British misrule of a home market for its farm products, and was forced to send them across the Channel to be eaten in England, the Irish growers became so poor that they were no longer able to be customers to the English work-shop. The *Times* states this fact in the passage quoted by Mr. Costigan: "When the Celt has crossed the Atlantic, he begins for the first time in his life to consume the manufactures of this country" (England.)

They are so plundered and impoverished under this system that existence in Ireland is no longer possible. A depopulation of the island begins, which has taken off not only the natural increase of a prolific people, but left 1,659,330 souls less in 1851 than in 1841. They are flying from British free trade at the rate of a thousand a day; but the system pursues them over the waves. Free trade, by its organ, the *Times*, exults in the prospect of the day "when the chief produce of Ireland will be *cattle*;" and "the nine or ten millions of Irish, who by that time will be settled in the United States, will be much better customers to England than they now are." The exile can no longer be made to wear a collar, visibly branded with the words: "Patrick, the Celt, born thrall of Cedric, the Saxon;" but Free Trade cries after him: "Patrick, the Celt, born *customer* of John Bull; Patrick, the strong worker, who can no longer extract food enough from his native fields to make him a desirable customer, but is suffered to cross the Atlantic to raise crops in the fresh fields of America, which he must exchange for manufactures at the English work-shop, and not at the work-shop of his neighbor, any more than he did at home."

Is it not the strangest thing in the world, that Irishmen should be satisfied with this; that they should be content to be more effectual tributaries to the wealth and power of their hereditary tyrants, *after* escaping from the necessity of it, than before; that they should enroll themselves in such large proportion among the supporters of the British system, and give their strength to oppose the same national protective policy in America, which Irish patriotism maintained while Ireland had a Parliament of her own?

John Costigan at last sees the absurdity. His eyes are opened. The eyes of Irishmen in the old country are opened too. An association in Dublin, "*The Parent Board of Irish Manufacture and Industry*," is endeavoring to accomplish, by opinion and voluntary compact, what there is no longer the power to accomplish there by law, to diminish the sale of English fabrics, and to give the preference to their own. Irishmen in the United States can act much more effectively. They have only to coöperate with the large majority of native citizens, and establish the Whig protective system, to pull down the manufacturing and commercial supremacy of England in ten years—and for ever. It is for them to decide whether they will follow John Costigan in the cause of their native and adopted countries, or will continue the policy which makes them and their brethren at home the forced customers of England.

THE AERATION OF PLANTS.

BY ROBERT HUNT.

FOR the discovery that oxygen gas is exhaled from the leaves of plants during the day-time, we are indebted to Dr. Priestly; and Sennebier first pointed out that carbonic acid is required for the disengagement of the oxygen in this process. M. Theodore de Saussure and De Candolle fully established this fact.

The following experiments, which are but modifications of those of De Candolle, will place the matter in the clearest light: A bell-glass was filled with distilled water and inverted in a plate of oil; fresh-gathered leaves and young sprigs were previously placed in the water; another similar glass was filled with water strongly impregnated with carbonic acid gas, in which the same kind of leaves, &c., were placed, and this was likewise inverted in oil; a sprig of mint was placed in a bottle filled with carbonic acid, a bent tube was inserted through the cork, and this tube carried into a vessel also filled with carbonic acid; the bottle was inverted in a vessel filled with mercury. These arrangements were exposed to bright sunshine. In the glass filled with distilled water, no oxygen gas was discovered; but in the other, pure oxygen gas was speedily set free; and in the bottle containing carbonic acid, which was exposed for many days, under the most favorable circumstances, a considerable quantity was collected. Now it is very evident that the oxygen must have been produced by the decomposition of the carbonic acid, effected by the leaves, under the influence of the solar beam.

The woody fibre of plants, and all the carbon which is found as an elementary constituent of the resins, gums, juices, &c., of the vegetable world, is derived exclusively from the atmosphere, to which it is supplied by the respiration of animals, and all those processes of combustion which are continually going on.

By some peculiar function, the leaves of plants during every moment of their lives are absorbing carbonic acid. It has been stated that the reverse of

this takes place during the hours of darkness, and that at night the leaves absorb oxygen, and exhale carbonic acid. It appears to me that this statement has been made without sufficient consideration, or the requisite experimental evidence. "This reversal at night," says a most talented philosopher, "of what was done in the day, may, at first sight, appear at variance with the unity of plan which we should expect to find preserved in the vegetable economy; but a more attentive examination of the process will show that the whole is in perfect harmony, and that these contrary processes are both of them necessary in order to produce the result intended." He then, evidently feeling the difficulty of the question, proceeds to explain this harmony as follows: "The water which is absorbed by the roots, generally carries with it a certain quantity of soluble animal or vegetable materials, which contain carbon. This carbon is transmitted to the leaves, where, during the night, it is made to combine with the oxygen they absorb. It is thus converted into carbonic acid, which when daylight prevails is decomposed, the oxygen being dissipated, and the carbon retained. It is evident that the object of the whole process is to obtain carbon in that precise state of disintegration to which it is reduced at the moment of its separation from carbonic acid by the action of solar light on the green substance of the leaves; for it is in this state alone that it is available in promoting the nourishment of plants, and not in the crude condition in which it exists when it is pumped up from the earth, along with the water which conveys it into the interior of the plant. Hence the necessity of its having to undergo this double operation of first combining with oxygen, and then being precipitated from its combination in the manner above described." These passages are selected, not with any view of reflecting upon their accomplished author, but because they afford the best expression of the views which have been generally entertained on the strength of the experiments of Saussure and Grischow, which admit of another explanation.

It is only the green parts of plants which absorb carbonic acid; the flowers absorb oxygen gas. Plants grow in soils composed of divers materials, and they derive from these, by the soluble powers of water which is taken up by the roots, and by mechanical forces carried over every part, carbonic acid, carbonates, and *organic matters containing carbon*. (?) Evaporation is continually going on, and this water escapes freely from the leaves during the night, when the functions of the vegetable, like those of the animal world, are at rest, and carries with it carbonic acid. "A cotton wick," says another experimental philosopher, "enclosed in a lamp which contains a liquid saturated with carbonic acid, acts exactly in the same manner as a living plant in the night. Water and carbonic acid are sucked up by capillary attraction, and both evaporate from the exterior part of the wick." And this is the true exposition of the matter.

A plant placed in a vessel containing water impregnated with carbonic acid, and carefully closed, so that no water could escape by evaporation except through the plant, was placed under the receiver of an air-pump in which was put some pure potash, and a good exhaustion effected. The potash was found to have absorbed carbonic acid. The same arrangement was made, only that the water now used was *distilled*. Under the same circumstances in every respect, a like quantity of moisture was found to be absorbed by the caustic potash, but of course no carbonic acid.

Precisely similar arrangements were placed under bell-glasses filled with atmospheric air, which was dried and freed from carbonic acid, by exposure to potash for some time. In neither case could any diminution of the quantity

of oxygen be detected, but carbonic acid was found in the air in which the plant in the carbonated water was placed, but not a trace in that which surrounded the plant in distilled water. I need not say that these experiments were made in the dark.

There is no reversion of the processes which are necessary to support the life of a plant; the same functions are operating in the same way by day and by night, but differing greatly in degree. During the hours of sunshine, the whole of the carbonic acid absorbed by the leaves, or taken up with water by the roots, is decomposed, all the functions of the plant are excited, the processes of inhalation and of exhalation are quickened, and the plant pours out to the atmosphere streams of pure oxygen, at the same time that it removes a large quantity of deleterious carbonic acid from it. In the shade, the exciting power being lessened, these operations are slower, and in the dark they are very nearly, but certainly not quite suspended.

The experiments of Sennebier show that the most refrangible of the solar rays are the most active in determining the decomposition of carbonic acid by plants. The views of this philosopher have been generally adopted. A few years since, however, Dr. Daubeny published in the Transactions of the Royal Society the results of some experiments which appeared to show that to the luminous or yellow rays, and not to the violet, must this influence be referred; and more recently, at the meeting of the British Association at Cork, Dr. Draper communicated a paper, in which he states that, having tried the effects of the solar spectrum upon tubes filled with water saturated with carbonic acid, and in which leaves were placed, he found that the greatest quantity of gas was set free from the fluid placed in the yellow ray, thus apparently confirming the statement of Dr. Daubeny.

Since this announcement, the very gloomy and uncertain state of the weather has almost entirely prevented my testing the correctness, or otherwise, of Dr. Draper's results. During a few faint gleams of sunshine, I have repeated the experiments in Draper's own method, and have found that *bubbles of air* have been liberated in the tubes under the influence of the yellow and red rays, but they have been *carbonic acid*. In the tubes which were placed in the blue and violet rays alone, a perfect decomposition had taken place, and the bubbles which were collected were *pure oxygen gas*.

Experiments have been made with absorbent media, the light, which has been carefully analyzed, permeating under the influence of the blue light: in every instance oxygen gas has been collected, but not any under the energetic action of yellow and red light.

However, from the first development of leaves until the perfect maturity of the plant, these processes which we have been considering are continually carried on; and not these only, for it is evident that the same agent is active in producing the decomposition of water, and I believe also of ammonia, from which the plant derives the hydrogen and the nitrogen it requires for the formation of its several principles.

We have now certain knowledge. We know that all the carbon which forms the masses of the magnificent trees of the forests, and of the herbs of fields, has been supplied from the atmosphere, to which it has been given by the functions of animal life, and the necessities of animal existence. Man and the whole of the animal kingdom require, and take from the atmosphere, its oxygen for their support. It is this which maintains the spark of life, and the product of this combustion is carbonic acid, which is thrown off as the waste material, and which deteriorates the air. The vegetable kingdom, however, drinks this noxious air; it appropriates one of the elements of this gas, (car-

bon,) and the other (oxygen) is liberated again to perform its services to the animal world. It is not possible to conceive a more perfect, a more beautiful system of harmonious arrangement than this, making the animal and the vegetable kingdoms mutually dependent. The existence of the one ceases when the other is destroyed. If the vegetable world was swept away, animal life would soon become extinct; and if all animal existence was brought to a close, the forest would fall, and the flowers of the field, which now clothe the earth with gladness, perish in the utterness of a lamentable decay. It has been supposed that the vegetable world was called into existence long previous to the creation of animals, and to this period is referred the formation of the coal strata. There might have been an epoch when the disturbed condition of the earth—its earthquake shocks and volcanic strugglings—may have poured so large a quantity of carbonic acid into the atmosphere, as to have rendered this planet unfit for the habitation of animals, until a teeming and most gigantic vegetation, by exhausting it for its own supply, purified the air, and rendered the more quiet earth a fitting abode for creatures endowed with reason and instinct. But such events do not appear again likely to occur, and it is not within the range of probabilities that the animal or vegetable kingdoms will ever have an independent existence.

The animal kingdom is constantly producing carbonic acid, water in the state of vapor, nitrogen, and, in combination with hydrogen, ammonia. The vegetable kingdom continually consumes ammonia, nitrogen, water, and carbonic acid. The one is constantly pouring into the air what the other is as constantly drawing from it, and thus is the equilibrium of the elements maintained.

Plants may be regarded as compounds of carbon vapor, oxygen, hydrogen, and nitrogen gases, consolidated by the all-powerful, all-pervading influences of the solar ray; and all these elements are the produce of the living animal, the condition of whose existence is also greatly under the influence of those beams, which are poured in unceasing flow from the centre of our system. Can any thing more completely display a system of the loftiest design and most perfect order than these phenomena?

The most casual observer could not fail to remark the peculiar influences of the solar agencies at different seasons of the year. In spring, a fresh and lively green pervades the field and forest; this in summer assumes a darker hue, and in the autumn passes gradually into a russet brown. In a very early stage of my photographic researches, I discovered a remarkable difference in the chemical action exerted by the solar rays an hour or two before noon, or an hour or two after it. I am now convinced—although it will require continued observation for many years to prove it—that the same difference is to be detected between the solar emanations of the vernal and the autumnal periods. The change in the color of the leaves appears to be entirely dependent upon the absorption of oxygen, which all the green parts of plants have the power of absorbing, particularly in the dark. This true cause of chemical affinity, it would appear, goes on equally with the spring or the summer leaves; but during these periods the vital force, under the stimulus of the light, is exerted in producing the assimilation of the oxygen for the formation of the volatile oils, the resins, and the acids. In the autumn this exciting power is weakened; the summer sun has brought the plant to a certain state, and it has no longer the vital energy necessary for continuing these processes. Consequently, the oxygen now acts in the same manner on the living plants as we find in experiment it acts upon the dried green leaves, when moistened and exposed to its action. They absorb gas and change color.

Sir John Herschel observes, in reference to the action of light on the juices of plants: "The earlier flowers of any given species reared in the open air, are more sensitive than those produced, even from the same plant, at a late period in its flowering, and have their colors more completely discharged by light. As the end of the flowering period comes on, not only the destruction of the color by light is slower, but residual tints are left, which resist obstinately." These residual tints are the same which produce the brown of the autumnal leaf; and the same agent may be traced in the production of photographs upon papers spread with expressed juices, and on the changing colors of flowers and of leaves.

A remarkable example of the influence of light upon the juice of plants, is seen in the *Cacalia ficoides*, cited by Liebig. During the hours of darkness, this plant, like others, absorbs oxygen, and in the morning it is as acid to the taste as the sorrel. By the influence of the morning sun it loses this oxygen; at noon it is tasteless; and, by the continued action of the light, still more is abstracted, and the plant is positively bitter in the evening.

Experiments have been instituted with a view of ascertaining if any particular ray of the spectrum had the power of inducing, more powerfully than others, the progress of plants towards the light, a phenomenon which is strikingly exhibited by the potato. It would appear that the yellow or pure luminous rays exert this influence with the greatest force; but it must be admitted that the results obtained have not been so satisfactory as could be desired. Indeed, no correct conclusion can be arrived at, until the experiments are tried with the isolated rays of the prismatic spectrum themselves. I am every day more and more convinced of the defects of absorbent media in these and similar researches.

HOW PROTECTION AFFECTS THE FARMERS OF GERMANY.

A FEW months since, we laid before our readers a statement respecting the sugar trade of France, showing that, although that made from the beet enjoyed no protection whatsoever, it was gradually driving out the colonial sugar, the advantages resulting from *proximity to market* more than counterbalancing those resulting from the tropical climate of the sugar islands. We now have to record the still more remarkable growth of the culture of sugar in the States of the German *Zoll-Verein*.

The table before us gives only the quantity of beet-root cultivated; but the general estimate throughout Germany is that, *with the greatly improved processes resulting from a few years of protection*, they now obtain one part of sugar from twelve of beet; and we have, therefore, added another column, giving the quantity of sugar in *centimes*, and a third, in which is given, in round numbers, the amount of the latter in tons, as follows:

	Beet-root. Centimes.	Sugar. Centimes.	Tons.
Fiscal year, 1844—5,.....	3,890,404,	324,200,	16,000.
" 1845—6,.....	4,453,092,	371,091,	18,000.
" 1846—7,.....	5,633,848,	469,487,	23,000.
" 1847—8,.....	7,676,771,	639,731,	32,000.
" 1848—9,.....	9,896,717,	824,726,	41,000.
" 1849—50,.....	11,532,721,	961,060,	48,000.
" 1850—51,.....	14,724,310,	1,227,025,	60,000.

We have here the most remarkable growth of agricultural production that

is, as we believe, on record; and it occurs precisely as the loom and the spindle, the hammer and the anvil, are, more and more, taking their natural places by the side of the plough and the harrow, as is seen in Belgium, and Germany, and Russia; while throughout the world, the tendency towards the diminution of production exists in the precise ratio of subjugation to the unnatural system attempted to be established by England, as witness, Ireland, Portugal, Spain, Turkey, India, and all other of the colonial possessions of Great Britain.

ON THE ADVANTAGE OF THICK SOWING.

BY DAVID BARCLAY, M.P.*

THE following is the result of some experiments which I made last year, in order to ascertain the relative merits of thin and thick sowing wheat, drilling, dibbling, and by broad-cast. They were conducted with great care upon five acres of level land of uniform quality, being a good deep loam on a chalk subsoil, following a clover ley folded by sheep. The land was ploughed about five inches deep, as it was not thought desirable to bury the sheep-dressing below that depth. The seed was put into the ground about the 7th of December, 1843, and the wheat was hoed in the spring of 1844, except the acre sown by broad-cast, which was harrowed instead of being hoed. The plants in Nos. 2 and 3 (thin sowings) were by much the strongest, and looked the best throughout the season, until the approach of harvest, when it became evident that the quality of the grain and straw was inferior, more particularly on No. 2, which appeared to have suffered a little from mildew.

Samples of the different lots were submitted to an eminent miller, and the value of each determined by him; the straw was valued at the market price. (See next page.)

The results of these experiments are very remarkably in favor of thick sowing, and particularly of the old broad-cast system; and if not conclusive against the doctrine of thin sowing, so strongly, and, I may add, so ably advocated in the present day, should at least induce caution on the part of farmers before they depart from the practice of their forefathers. Indeed, it is difficult to believe that so great an advantage as the saving of a bushel or a bushel and a half of seed per acre can have been overlooked for so many generations. It seems more reasonable to suppose that long practical experience has taught the farmer the more prudent course of a liberal supply of seed. It may however be contended, that had the ploughing been deeper and the seed put earlier into the ground, the result would have been different: this is not improbable; and it is possible the deficiencies in the quality and quantity of thin-sown wheat and straw might have been less observable, but the large differences which my experiment indicates could hardly, I think, have been made up. I have this year repeated the trial of thin sowing, having drilled one acre on the 26th of October last (the land having been *deeply* ploughed) with one bushel of seed, the rest of the field having two bushels per acre. The result I shall be happy to communicate if desired.

* Journal of the Royal Agricultural Society, London.

ACCOUNT of EXPERIMENTS on the relative Merits of Thin and Thick Sowing, Drilling, Dibbling, and Broad-cast, conducted on Eastwick Farm, in the County of Surrey.

No.	Quantity of Seed used per Imp. Acre.	System pursued.	Grain produced.	Weight per Bushel.	Straw produced.	Value of Grain.	Value of Straw.	Total Value of the Produce per Acre.
1	2½ bushels,	Drilled 9 inches apart,	Head, . . 34 bushels, Tail, . . 3 37	Lbs. 64½	Trusses. 70	Head at 7s. per bush. 11 18 0 Tail at 6s., 0 18 0 12 16 0	At 36s. per load, 3l. 10s.	£. s. d. Grain, . . 12 16 0 Straw, . . 3 100 16 6 0
2	1 bushel,	Drilled 12 inches apart,	Head, . . 22 Tail, . . 3 25	62½	51	Head at 6s. 6d. per bush. Tail at 5s. 6d. 7l. 19s. 6d.	At 30s. per load,	Grain, . . 7 19 6 Straw, . . 2 2 6 10 2 0
3	1 bushel,	Dibbled 12 inches apart,	Head, . . 28 Tail, . . 3 31	63½	63	Head at 6s. 9d. per bush. Tail at 5s. 9d. “	At 32s. per load,	Grain, . . 10 6 3 Straw, . . 2 17 9 13 4 0
4	1 bushel and 3 pecks,	Dibbled 9 inches apart,	Head, . . 34 Tail, . . 3 37	64	72	Head at 6s. 9d. per bush. Tail at 5s. 9d. “	At 33s. per load,	Grain, . . 12 6 9 Straw, . . 3 6 0 15 12 9
5	2½ bushels,	Sown broad-cast,	Head, . . 37 Tail, . . 3 40	65	84	Head at 7s. per bush. Tail at 6s. “	At 36s. per load,	Grain, . . 13 17 0 Straw, . . 4 4 0 18 1 0

CULTURE OF INDIAN CORN.

BY L. DURAND.

To the Editors of the Plough, the Loom, and the Anvil :

INDIAN corn is one of the most important crops that grow in New-England, if not in the whole country, and any practical ideas in regard to its culture are always worthy of study and attention. In the March number of the *Plough, Loom, and Anvil*, there is an article on this subject by Mr. A. Robinson, of Portsmouth, N. H., whose management of that crop is so different from nearly all other practical farmers, that I have thought a few ideas might not be out of place. And first, I believe with him that the level or flat culture for corn is preferable to all other methods, having practised it for the last ten years; but as to the best method of curing the crop, either by topping or cutting up, I cannot agree with him by any means. I have practised cutting up and stacking my own corn crop for the last twelve years, and intend, should I live as long, to do so for the next twelve years to come, because I am satisfied that it is the best and right way. If Mr. Robinson will take the trouble to look through the back volumes of the *Albany Cultivator* for the last twelve or fifteen years, he will find repeated practical experiments in favor of my method, and, I think, *not one* to sustain his own. He also conveys the idea that cutting up and stacking is the old method practised by farmers, and, for aught I know, this may be the case in New-Hampshire. But in Connecticut, the old method was to top the corn, if not in "the milk," just after it was thoroughly glazed; while the new method is to cut up at the bottom, and stack. But Mr. Robinson says, in substance, that both plans, either of cutting up, or allowing the corn to ripen on the whole stalks standing, amount to the same in principle; that is, the corn will shrink from loss of sap in either case. But how these theories can be consistent with each other, with entirely different methods in practice, he has not seen fit to tell us. After twelve years of practice, we are satisfied that cutting up corn and stacking is preferable to all other methods, both in regard to the amount of corn, either by weight or measure, and in economy of saving fodder. The corn may be cut up as soon as the centre of the kernel is glazed; and while the corn is yet green, and when put up in good-sized stacks, it will stand the weather much better than in small ones, although more time will elapse before the stacks will cure through. The stacks may be husked out in pleasant weather, in the field; and after the stalks have cured enough, they may be put in the barn for winter fodder. Then you have the land entirely clear for spring work, which is not the case where corn is topped, as the bottoms are left in the way, and much fodder is also lost, as well as materials for making manure in the barn-yard. We give one or two experiments in harvesting corn, which go to show that the "cutting-up" method is preferable to any other.

Judge Buel, in September of 1838, went into his corn-field with two of his neighbors, and selected three parcels of corn as near alike as could be, of thirty-six hills each: this was in the first week of September. On the 23d of the same month, the three parcels were husked and weighed:

No. 1, cut up, had . . .	126 ears, which weighed 56 1-2 lbs.
" 2, topped, . . .	127 " " " 52 "
" 3, standing untopped, 125	" " " 53 "

These figures (omitting fractions) show the results from that number of hills all in favor of the cut-up corn; while the standing corn exceeded the topped, as will be seen. In the *Cultivator* for October, 1844, a statement is

given, which was made on the Bloomfield Farm, Harvard, Mass. Twelve rows were cut and stacked, leaving every other row standing, which were topped. On the first of November,

Four bushels of ears of the cut-up corn weighed	292 lbs.
Four " " topped "	241 "

Balance in favor of the "cut-up" corn, . . 51 "

In January the two parcels were shelled, and the stacked corn measured *three pecks* more than the other.

We might easily multiply experiments in this way in favor of this method, but the foregoing will suffice. I will not pretend to say that a good crop of corn may not be obtained "when the stalks were cut in the milk," but should not feel disposed to try the plan. As to the general management of the corn crop, of course, every part of the labor, from the carting of manure on the grounds to the harvesting of the corn in autumn, must be well done, in order to get a good crop. It is not strictly true that if you "*half* hoe you get *half* a crop, and if you hoe *well* you get a *good* crop;" because there are many soils which are so free from weeds that a good crop of corn can be raised with very little hand-hoeing at all. As a general rule, I have no faith in ploughing a sward ground only "three inches deep" for corn; for a sward ground, heavily manured with coarse stable manure, and only ploughed to the depth of *three inches*, must in an ordinary drought suffer very much, while in a heavy drought it must entirely ruin the crop. In the first place, I would advise friend Robinson to throw away his old plough, if he has not done so already, and get one of "Prouty's Centre Draft, or "Ruggles's Eagle," with wheel and cutter, either of which will do good work. Then, after giving his sward ground a good dressing of manure, put in his plough and turn down a furrow to the depth of seven or even nine inches. Should the subsoil at this depth be inclined to be stiff and heavy, pass a subsoil plough along behind the sward plough, going down eight or nine inches farther. This would break up the hard pan below. Then, in case of a drought, the roots of the corn would strike down in search of moisture; and as evaporation was going on rapidly at the surface, the roots of the corn below, acting as conductors, would constantly bring the moisture to the surface. And in case of very wet weather, the deep soil would act as a drain to draw down the water from the surface, out of the reach of the growing plants; as every body knows that stagnant water standing at or near the surface of the ground, is very injurious to plants of all kinds. After the ground is well ploughed, then pass a heavy "ox-roller" over the furrows, making it all smooth; then go around with a good fine-tooth ox-harrow, the same way that it was ploughed, so as not to tear up the turf, which will not be the case after being rolled, if the sward was all turned down well by the plough. To mark out the rows of the corn, we use a "corn-marker," which is drawn by a horse, and is sure to mark out the rows both ways, or at right angles. The distance that the rows should be planted apart must depend on the kind of corn that you plant. The kind that we raise, which grows from five and a half to six feet high, we plant three feet and a half apart each way, with from three to four kernels in a hill. Corn that grows thick, and from seven to eight feet high, should be planted from four to five feet apart in the row. In planting, we generally scatter the seed three and four inches in the hill, and if the stalks are too thick at hoeing, we thin them; and, as our corn suckers and branches out a good deal, we always let all grow together till harvest. We give our corn *two* regular "*hoeings*," going through

at each hoeing with the horse "cultivator" each way; and thus the ground is all stirred, excepting around the hill, which is readily bushed out with the hoe. The cultivator may be passed through the corn after it gets breast high, to stir the ground and keep down the weeds. In hoeing our corn, our object is to keep the ground as level as possible, making no more hill than the "cultivator" will naturally make in going through the rows each way.

If your ground is stock ground, and is inclined to be weedy, you must go through the corn about the first of August, and cut up the weeds with the hoe. About that time all the weeds in the corn will have started for the season, and a good cleaning out will keep them down. On a sward ground of old meadow, turned over as we have named, very few weeds will trouble you the first year, and so about all the hoeing necessary can be done with the cultivator, simply going through with the hoe, to clean out the hills. As to corn mixing by or through "atmospheric influences," we have no faith or confidence in that theory at all. All correct theory and practice, so far as we have knowledge, go to prove that corn mixes by the pollen or fertilizing dust falling on to the silk of the ear, which communicates to the cob and forms the kernel. Many kinds of plants have the male and the female plant. Like the strawberry, there are "staminates" and "pistilates," and the fertilizing dust of one must impregnate the flower of the other, or else there will be no fruit. Should Mr. R. wish to try this experiment, let him plant a single hill of corn by itself in a field out of the reach of the pollen from corn-fields, and as soon as the spindles make their appearance on the stalk, cut them off, and not let them flower at all; in the fall he will find *cobs* formed, but no *corn* upon them. Unless, therefore, the silk of the corn is impregnated by the pollen, no corn will be formed. The whole atmosphere for a long distance around a corn-field in the flowering-time, is full of this pollen. Let two kernels of corn be planted side by side, the white and yellow, for instance, and there the mixture of the two kinds will be very plainly marked. The first two rows will be found to be mixed from a third to half of each kind, while the mixture will continue to grow less and less as you recede towards the other side of the field. Early and late kinds of corn can be gradually assimilated to each other's character by thus planting and mixing together, although one single season could not make any material difference. A heavy sward turned over as I have named, without manure, but with the addition of a handful of the poudrette in the hill, will give a good crop of corn, and produce no weeds of any consequence to trouble the growing crop. There are many methods practised by farmers of growing a good crop of corn, but that method which combines the best system and order, and greatest accuracy, should be adopted in preference to any other.

Derby, Conn., March 27, 1852.

CANADIAN RECIPROCITY.

THE scheme for throwing open the markets of this country to the farmers of Canada, and thus abolishing all the protection that is *directly* afforded to the plough and the harrow, appears to have failed, it being now fully understood that its only effect would be that of offering a *bonus* upon the settlement of the British provinces at the expense of the United States, whose growth in wealth and population could not fail to be seriously affected by it. It is, therefore, now proposed that the Canadians should adopt our tariff, and that we should appoint commissioners to see to the collection of the duties in Montreal and Quebec, the proceeds of all collections there and elsewhere to be divided

between the Canadian and American treasuries, in the ratio of population. Such a proposition has been forwarded to the editors of the New-York *Tribune*, by a respected correspondent at Montreal, with a request that they will give their opinion in reference to it, which is done by them in the following words; the correctness of the views contained in which we most fully endorse, and recommend them to the careful consideration of our Canadian readers:

"Now, as our advice has been asked for, we will say that Canada seems to us to be playing a very poor game in this business. Why should she be bothering and bargaining for access to the markets of the United States? Why not help herself? What she needs is a home market, not a market a thousand miles off. Make it. No country is richer in water-power and every natural advantage for manufacturing. There is no sufficient reason why she should not become as prosperous as Massachusetts or Rhode Island, except that she is cursed with free trade with England, and has no home trade. Let her try the system on which the United States have grown great and powerful, and she can do the same. Lay a protective tariff, build up manufactures, make a home market, and you will have as little occasion to beg for the privilege of making your exchanges in the markets of New-York or Boston as in those of London. Help yourself is the great dictate of practical wisdom for nations as for individuals."

[COMMUNICATED FOR THE PLOUGH, THE LOOM, AND THE ANVIL.]

FARMERS AND BOOK-LEARNING.

It is a very common thing to decry "book-learning," especially in its relation to the practical business of life. Something may be said by way of apology for this habit, but it is unquestionably productive of great evil. All readers know a great deal, and about a great many subjects. But how much of this knowledge is the result of their own unaided experience? Were all they have acquired from other sources erased from the tablet of their minds, they would be very much inclined to shave their heads, and play the monk, till they have qualified themselves anew for the stations they now occupy.

Whence was this knowledge chiefly obtained? From two sources: reading and conversation. This is true of all kinds of knowledge, both of the arts and the sciences. But conversation can be carried on only by a limited number of individuals. Ears are not so constituted as to enable us to hear all that is said in the world, or even in our own neighborhood, nor all that is worth hearing. The pen and press step in, and do what they can to supply this deficiency; communicating with multitudes who, without their aid, could know nothing of these things. We can now hear thousands of miles; and thus is scattered, as on the wings of the wind, the information which would otherwise attract the attention of but few.

In theory, the pen and press communicate the better part of what is thought or spoken; and though they sometimes err, the fault is not unpardonable, nor fatal. We should be thankful that we are obliged to read and hear so little of what is worthless.

Note another fact. Nine tenths of all that appears in the ponderous volume, relating to matters of general interest, first appeared in some periodical. Neither in the arts nor in the sciences do we find an exception to this remark. Nay, more. In the periodical, this truth first appears in a form suited to the wants of the public. Afterwards it is remodelled, and, being clothed in a scholastic dress, forms a volume of science, suited only to the learned. An illustration of this, fresh in the recollection of my readers, is found in the "pendulum experiment," as illustrating the revolution of the earth. You may remember the story of the young gentleman, born and bred in the city, who, having purchased a farm in the country, was offered his choice out of a

large herd of cows. Though a little embarrassed, lest he might display his ignorance, he soon made a selection, saying: "I will take that thick-necked one." Upon this, the boy was ordered, with a partially suppressed laugh from all hands, to drive to the young farmer's new establishment a fine, stout bull. Had this youth but examined even "the pictures" in our agricultural journals, he might have avoided so ridiculous a blunder, and the milk-maid would have been spared the mortification of being sent out to obtain her supply for the dairy from an animal unaccustomed to render such service.

There is a great deal of *fancy farming*. The incident just detailed belongs to this department. The young farmer selected his "cow" on that principle. Thousands do the same thing. Some of this class carry on their farms very much as somebody is said to have bought a library—by the appearance of the covers. Each has his own fancy, and is controlled by it; while true science and common sense have not even a seat at the council-board.

Nor is this class of farmers confined to the novice. It may be found among those who have grown gray upon a farm. True, in outward form, there may sometimes be a fair appearance. One may manifest an ardent desire to adopt the best modes, and yet may belong in these ranks. *He refuses thoroughly to inform himself*, but is governed by his fancy in following the lead of a mere pretender. *This is his fancy*. He prefers this to the study of the science.

I remember visiting one of the best farming towns in Massachusetts some two years ago, and when in conversation with some of the most intelligent farmers in the place, one of them inquired: "Are you concerned in Bommer's patent?" An emphatic "No, sir," and a smile, materially affected a visage already unnaturally prolonged by the recollection of ten dollars thrown away on that humbug. Five dollars paid for a single paper that explained that mysterious fertilizer, would have saved "other five" dollars, not only for him, but for several of his neighbors. "Experience," *as the word is popularly used*, is but an imperfect security against the thousand cheats and humbugs to be found in every community.

He is but a fancy farmer who chooses to continue the modes and methods of his ancestors. His father and grandfather used to do so, and hence it must be right. This is his only principle of action. In other words, it is his fancy to do so, because *they* did. He knows how to conduct a farm only by imitation, and looks to the past for his models, without knowing or understanding the results of his own or their operations. To him there is no such thing as progress, and failure and success are words without meaning. Twenty bushels of corn to the acre is quite satisfactory, so long as he departs from no established usage, and is not outdone by his neighbors. I know not why he should be called a wise man more than our city-born friend before spoken of. Both are governed alike by considerations undeserving of confidence.

The subject of manures is a great science. Our fathers knew but little about it. They had less occasion to know than we have, for they had not so thoroughly exhausted their soils. But the process was carried on with a terribly destructive constancy. We are trying to carry it a little farther; and in some instances, the work seems complete through almost entire States. Harvests fail to support the laborer, and this, in any other employment, would be considered and treated as a failure. No other class of men would remain contented with this condition. The farmer alone manifests patience so perfect, and that too when he *might* double and quadruple his income.

How entire is the revolution in the mode of conducting most of the manual

operations of the day! Every art has its improved tools and reformed methods. Agriculture ought not to be counted an exception. The youngest of our readers can remember the publication of the first work worthy the name of Agricultural Chemistry; and science necessarily precedes judicious, intelligent practice. Under other circumstances, we can only *blunder* upon success. We may happen to *guess* right, but the chances are strongly against us. But with correct views of the chemistry of agriculture, the way is opened for judicious application of manures, and a wiser succession of crops. Hence there is no apology for such a condition of things.

"Poor land" often means scarcely more than that it is adapted only to particular products, or that it needs a peculiar manure. But circumstances forbid the further discussion of this subject at present, and I must wait a future opportunity. I purpose to resume it hereafter. M. P. P.

FARMING IN MINNESOTA.

To the Editors of the Plough, the Loom, and the Anvil:

HAVING been resident here long before this Territory was organized, I have had ample opportunity of observing the manner in which our farmers commenced operations; and seeing now very many who have already realized a competence, I have marked with some care the difference between this class and those who are still struggling, and will probably continue to struggle for years, with what they esteem unavoidable difficulties.

Very few of the original settlers brought any property with them; consequently, it has been very general for a man disposed to locate himself to begin by working out for a season, to enable him to provision himself for the first year, and buy him a team: these are by far the most successful. There are few who began thus that have not, in five years, purchased their lands, built substantial houses, and surrounded themselves with a reasonable amount of stock, and as much of farming comfort as is desired in this distant Territory. The first summer is usually spent in breaking, the fall in building, and the winter in getting out fence. The breaking is generally done with a large, heavy prairie plough, drawn by six or seven yoke of oxen, turning a furrow of about twenty-two to twenty-eight inches, and about two inches thick. This furrow-slice is thrown over quite flat, and the breaking is found to answer best. When there is a good coat of green herbage on the land, a process of fermentation is induced which destroys the native grass and entirely rots the roots, so that the land is in a state to cross-plough the following season, and turns over almost as mellow as an old ploughing. In other cases, the breaking has been performed by a plough of ordinary size, throwing a furrow-slice of twelve to fourteen inches, and three to four deep, the furrow-slice overlapping. This has been accomplished with three yoke of oxen. In the first method, about two acres per day, and in the latter, one and a half acres, are the usual day's work. In both cases, crops of oats, or corn, or potatoes, are sometimes raised the first year; they are generally superior in quality, but not so large as in after years: oats or corn, 30 to 40 bushels, and potatoes, 150 bushels per acre. I believe it is generally conceded that the second method of breaking yields the best first year's crop, although it is supposed to cost a little more.

In subsequent years, the proceedings are much about the same as in older countries, except that in many cases the fence is incomplete the second year, being not more than four rails' height, and on some farms a little remote

from settlements, fences are occasionally dispensed with altogether. It is well if there be no cattle to trespass, but it too often happens that half the crop is destroyed by cattle. A further loss is often incurred by putting in more crop than can be harvested in proper time; and often, all for want of barns and proper root-houses, the crop is still further wasted, so that before winter is over, I have known one of these miscalculators buying grain and potatoes for his own use.

We find such farmers always ready to believe any thing and every thing to excuse themselves.

Like all virgin soils, the land in Minnesota is too rich, and requires great care and much labor, with good management, to keep down the weeds. All grain crops yet tried have been very productive; but winter wheat is not likely to be a favorite crop. As a want of sufficient snow renders it uncertain, it must often be winter-killed until some means are arrived at to guard against this casualty.

Having always found that a small piece of ground, well cultivated, is more profitable than a large farm, half attended to, I have always advocated not more than twenty acres of ploughing, that being about the extent that a man can look after and harvest properly.

If this part of the country be examined, I believe it will be found that the successful settlers have all confined themselves to from twelve to twenty acres in the first years.

For myself, I have latterly been confined to my garden; and, as the Indian agency here is situated on a sandy knoll, perhaps a pattern of the very poorest land in the Territory, it may not be uninteresting if I send you an account of last year's product of my acre and a half, the work being performed by young boys, and consequently I have not made any estimate of the expense:

Potatoes, 100 bushels, one half rotted; 50 bushels, at 75 cents,	- - - -	\$37 50
Cabbages, 500, 3 cents,	- - - -	15 00
Green peas, of various kinds, 5 bushels, \$2 00,	- - - -	10 00
Beans, " " 2 " 1 50,	- - - -	3 00
Onions, " " 12 " 0 75,	- - - -	9 00
Carrots, " " 5 " 0 50,	- - - -	2 50
Parsnips, " " 5 " 0 50,	- - - -	2 50
Beets, " " 4 " 0 50,	- - - -	2 00
Tomatoes, " " 4 " 1 50,	- - - -	6 00
Cucumbers, " " " " " "	- - - -	1 00
Squashes, various kinds, " " " " " "	- - - -	2 00
Pumpkins, " " " " " "	- - - -	1 00
Sweet corn and other early kinds, " " " " " "	- - - -	2 00
Garden seeds collected and sold,	- - - -	30 00
		\$123 50

Besides which, I have saved seeds for my own use, and many vegetables, of which I have kept no account.

Your very obedient,

St. Peter's, Minn., April 2d, 1852.

P. PRESCOTT.

CAUSE OF PRESENT PROSPERITY IN GREAT BRITAIN.

BRITAIN prospers whenever produce is low, and whenever the producers are in a course of being ruined by *British* free trade. The *London Times* predicts a prosperous year because produce of all kinds is thirty or forty per cent. cheaper than it was last year. The object of the system of that country is to have but ONE PURCHASER OF RAW PRODUCE, and that one herself, and

ONE SELLER OF MANUFACTURED GOODS, and that one herself; and the mode pursued for the accomplishment of that object is to have the universal establishment of *British* free trade, which every where means a monopoly of the power to supply the world with cloth and iron. How the present prosperity of Britain, under the influence of the tariff of 1846, affects ourselves, we know but too well. How it affects the producer so in other parts of the world may be guessed from the following description of the condition of the Sandwich Islands, which we take from one of the papers of the day :

"We have produce to sell," says the *Polynesian*, "but there is no one to buy. Could the coffee, sugar, syrup, molasses, potatoes and other vegetables, poultry, stock and fruits, now on hand, find a market at fair rates, the depression now existing would instantly vanish, and the consumption of merchandise increase fifty-fold."

When the people of Polynesia shall come to learn that it is to their interest to bring consumers to take their places by the side of producers, they will cease to complain that they have produce to sell and no body to buy it.

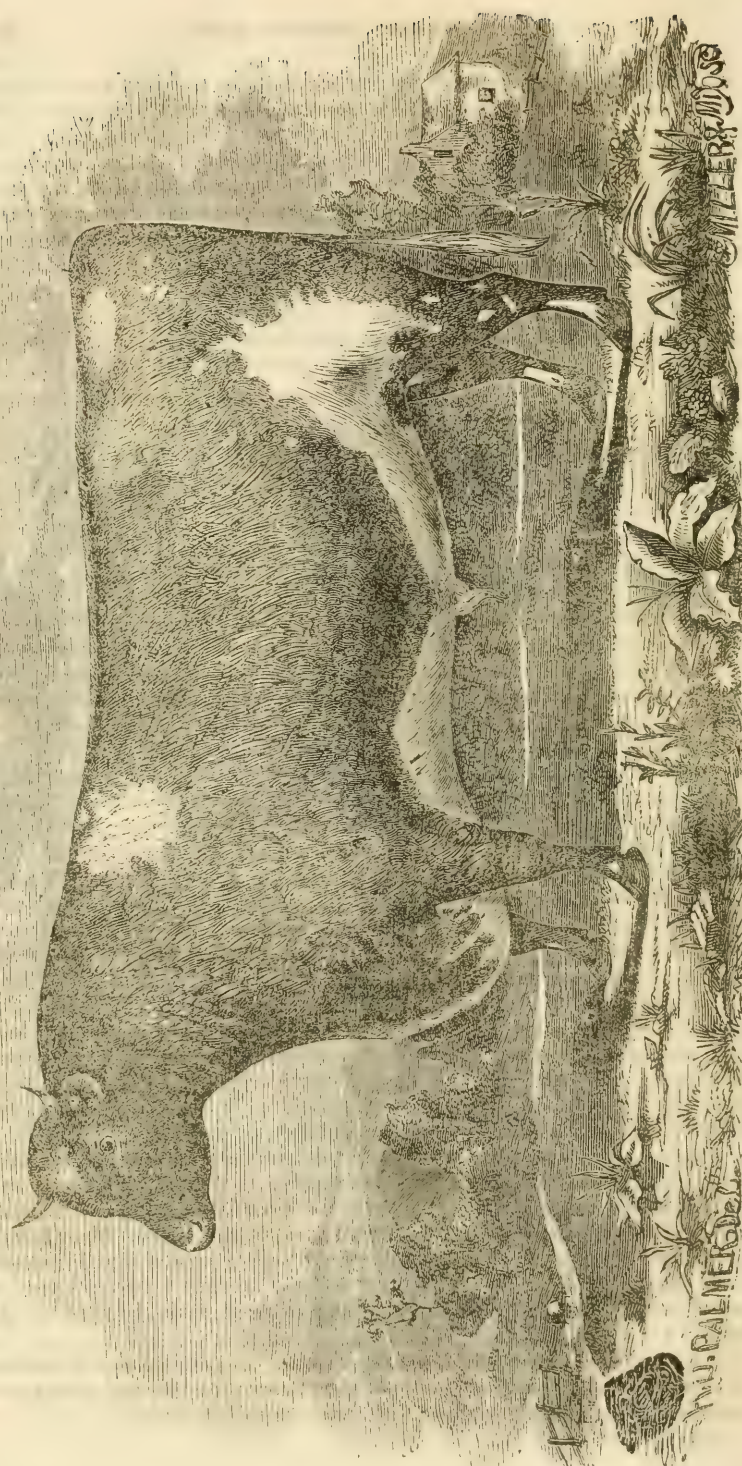
TO FARMERS' BOYS—A HINT.

THE writer of these remarks, says the *Albany Cultivator*, was once a farmer's boy, and speaks from experience when he recommends all farmers' sons to keep a register of every thing interesting coming under their observation, relative to their business. The time of planting or sowing crops, with the results of late or early planting appended; the effects of any peculiar mode of manuring; the benefit or detriment from thick or thin sowing; the kind of seed; the time or manner of harvesting; the result of draining, of deep or shallow ploughing, and of numerous other matters; and especially including the cost and profits of each crop, if accurately recorded, would not fail to yield a great deal of interest as well as usefulness. The time of the appearance of birds, insects, the flowering and fruiting of trees, or any thing else in relation to nature and its productions, would assist very much the acquirement of knowledge on these subjects, if made a matter of record. I am sure it would be a delightful employment, both at the time, and by its examination afterwards.

Now, all that is necessary is to get a small blank book, with a flexible leather cover, which may be had for a dime at any book or stationery store, and rule each page into two columns, the first for the record of planting, sowing, and all other operations during their earlier stages; and the second column for the registry of the results, directly opposite, on the same page. By comparing these results with the operations which produced them, a great deal of valuable practical knowledge would soon be obtained.

Another advantage might result from this practice. When any operation was deferred till too late, and loss was occasioned thereby, make a memorandum of this fact at the proper place in the second column, by the examination of which, the second year, this difficulty might be avoided. Many failures occur from a want of seasonable attention; such a journal would therefore leave an excellent memorandum book to refer to daily the second year, or any other year afterwards, to remind one of what must be done at the time.

Would not this be worth a thousand times its cost, by way of making accurate, intelligent, practical, and successful farmers, of lads and young men in the country, besides improving their knowledge of writing?



WILLER & CO

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S F CHAMBERS SHORN HORN BULL CHALTON

PORTRAIT OF S. P. CHAPMAN'S SHORT-HORN BULL,

S. P. CHAPMAN'S SHORT-HORN BULL "HALTON," AWARDED THE FIRST PRIZE BY THE NEW-YORK STATE AGRICULTURAL SOCIETY, AT ROCHESTER, IN 1851, IN CLASS OF "FOREIGN STOCK;" BEING THEN OWNED AND EXHIBITED BY THE HON. ADAM FERGUSON, OF WOODHILL, WATERDOWN, C. W.

To the Editors of the Plough, the Loom, and the Anvil:

In presenting you and your readers with a portrait of "Halton," allow me to give also his pedigree.

His color is a beautiful red roan. He was bred by Geo. Vail, Esq., of Troy, N. Y.; calved 20th August, 1847; got by Meteor, 104;* dam [Lady Barrington iii.†] by Cleveland Lad (3,407); grand dam [Lady Barrington, ii.] by Belvidere (1,706); gr. g. d. [Lady Barrington] by a son of Mr. Mason's Herdman (304); gr. gr. g. d. [Young Alicia] by Wonderful (700); gr. gr. g. d. [Old Alicia] by Alfred (23); gr. gr. gr. g. d. by Young Favorite, son of Favorite (252).

Meteor, the sire of Halton, was by Duke of Wellington, 55 (3,654); dam [Duchess] by Mr. Bates' celebrated Duchess, prize bull, Duke of Northumberland (1,940), &c., &c.

Lady Barrington iii., Duchess, and Duke of Wellington, were bred by the late Thomas Bates, Esq., of Kirklevington, Yorkshire, England, and imported by Mr. Vail. It will be seen, therefore, that Halton is descended *directly* from the justly celebrated BATES STOCK.

Speaking of the Barrington family, Mr. Robert Bell, the friend and tenant of the late Thomas Bates, Esq., in a letter to Mr. Vail, of July 31st, 1851, remarks: "I have no hesitation in saying that there is not a better tribe of cattle in England than the Barringtons. I have had several applications for the old cow [Lady Barrington] lately, although she is sixteen or seventeen years old; but I would not sell her, intending to keep her as long as she will breed. . . . I have now a heifer, from a daughter of your Lady Barrington iii., by fourth Duke of York, [the sire of Mr. Vail's imported heifer, "Yarm Lass," S. P. C.] not yet a year old, for which I would not take less than 100 guineas (\$500). The *reason* why I think so much of the Barringtons is, *they have plenty of hair, are good handlers, and most excellent milkers*, qualities that many short-horns do not possess." Mr. Vail, in a letter to me of the 19th August, 1851, follows this extract by saying: "I have now four cows and heifers of this tribe. My three which give milk *are all good milkers*, which corresponds with what Mr. Bell says about this family of short-horns."

Very respectfully yours,

*Mr. Pleasant Farm, Clockville, Madison }
County, N. Y., May, 1852. }*

S. P. CHAPMAN.

"HILLING" INDIAN CORN.

THIS subject has been one of considerable discussion among many of our farmers, who entertain very dissimilar views in regard to the practice. But

* Meteor, 104, was awarded the first prize at the Fair of the American Institute in 1843, as the *best bull of any age*. In 1844, he was awarded the first prize by the New-York State Agricultural Society, as the *best bull of any breed*; and also the first prize as the best Durham bull. He also won at the Rensselaer County Fair.

† Lady Barrington iii. won the first prize at the show of the New-York State Agricultural Society, held at Auburn, in 1846, and the first prize at the Rensselaer County Fair the same year.

the idea that Indian corn requires the earth to be elevated around its roots, is, we think, a mistaken one, and, in the language of a correspondent of the *Germantown Telegraph*, a "prejudice" without any foundation in fact. The writer very properly remarks, it is one of those prejudices for which we are "indebted" to our forefathers, and the high degree of reverence and affectionate veneration which we are prone to accord to the "wisdom" of our progenitors, will no doubt render it difficult to subdue.

Innovations, when they invade the sacred pale of long-descended customs, encounter but a cold reception, even in cases where their utility should at once, and to the most perfunctory and superficial observation, be really any thing but questionable.

In cultivating Indian corn, I am confident that "hilling" is a disadvantage to the crop. Of this I became fully convinced several years ago, on contrasting its results with those of the opposing system, in a field belonging to a friend. Since then I have instituted a variety of experiments, and have found that the least surface is most eligible, and that, in all modifications of soil and temperature, corn which is not "hilled up" is the most vigorous, less injuriously affected by drought, and produces more and sounder corn.

As all your readers may not be familiar with the *modus operandi* usually had recourse to in cultivating after this method, I will describe it. If the soil is green sward, it ought to be broken up early in the spring, with a deep and uniform furrow. After ploughing, suffer the soil to remain two or three days to "slack;" this will render it fine and light, and not a little the action of the harrow, which should be passed longitudinally over the piece at first, then diagonally, and, lastly, transversely, having been preceded by the roller, to press down and confine the furrow-slices, so that they will not be turned up or over by the harrow. The finer the soil is made by this working, the better. After harrowing, spread on your manure, if compost or old fermented dung, and work it in with the cultivator, and finish off with another thorough harrowing. The action of the cultivator and harrow will completely cover the manure without bringing it too far below the surface, a contingency which ought, by all means, to be avoided, as in such case a large proportion of its most energetic properties would be lost to the crop, or removed so far from the young roots as not to act until the crop had considerably advanced.

If the soil is naturally fertile, or if it has been liberally manured, or if it contains a large quantity of humus, I should prefer, perhaps, on some accounts, the adoption of the "Drill System;" but where there is but a medium richness of soil, the "hill" method is by all means to be preferred.

The land should, under such circumstances, be furrowed; the rows three and a half feet apart, and "checked off," so that three and a half feet may be the distance between the hills each way. This will afford free scope for the cultivator, to keep the surface of the soil at all times perfectly light and free.

When it can be obtained, I would, before dropping my corn, deposit half a gill of guano in each hill, mixed with one gill of house ashes, unleached, and a like quantity of gypsum. The seed should be soaked in a solution of nitre, or by an affusion of hot water, allowing it to remain submerged in the liquid till the latter is reduced in temperature to a tepid or lukewarm condition, and then coated with tar and sulphur, which acts as a preventive to the worm.

As soon as the corn plants make their appearance, give them a top-dressing of ashes and gypsum, with a little salt, and commence weeding as soon as the rows can be fairly traced or discerned by the eye. The arrangement here recommended enables the operator to pass the cultivator both ways; and as

no foul manure has been deposited *in the hills* to induce a premature development of spurious products, almost every weed will be eradicated without the use of the hoe. Let the cultivator be passed regularly through the piece as often as once a week, till the plants spindle, after which no further care or labor will be demanded. In this way, a good crop is almost invariably secured.

NEW BOOKS.

Far Off; or, Asia and Australia Described. With Anecdotes and Illustrations. By the Author of "The Peep of Day," etc., etc. 16mo., pp. 328. New-York: Robert Carter & Brothers, 285 Broadway. 1852.

This is a most invaluable little work, intended for the young, and presents subjects of deep interest to every youthful mind. It is designed to obviate the strong desire for *fiction* so frequently entertained, by cherishing a taste for *facts*; and more especially to excite an interest in those facts which ought most to interest the minds of immortal beings—facts relative to souls and their eternal happiness, to God and his infinite glory.

To form truly great and good characters, the mind must be trained to delight in *truth*, and the revealed truths of the Word of God are the firm basis of earthly happiness. This seems to be the prevailing idea of the excellent author of this interesting volume, which fact alone should give it an extensive circulation. The Holy Land, Assyria, Arabia, Persia, China, India, Tartary, Siberia, Australia, and Van Diemen's Land, with the characteristics, habits, and peculiarities of their inhabitants, climate, productions, &c., &c., are described with great fidelity, and a familiarity that at once excites the interest of the young mind, and cannot fail of absorbing the attention of the reader. It is elegantly embellished, and published in the Messrs. Carter's attractive style, and we doubt not will find an extensive circulation.

The American Miscellany of Useful and Entertaining Knowledge. Boston: Published by Bradbury & Guild, 182 Washington street. New-York: William C. Locke & Company, 135 Nassau street.

We have received from Messrs. Locke and Company, Parts I, II., and III., comprising the first volume of this entertaining Miscellany. The plan of furnishing a series of useful and entertaining papers at a *very low price*, and at the same time in a convenient form for binding, seems to have entered into the design of the publishers, and the experiment gives satisfactory evidence of success. Each part contains 120 octavo pages of neatly printed matter, embellished with fine wood engravings, at the reduced price of fifteen cents each part, or one dollar for eight parts. Judging from the numbers already issued, the work will be appreciated by the public, and we believe will secure to itself an extensive patronage. Those now published contain much to instruct and entertain the reader, and at a mere nominal price. It is issued once in six weeks, at one dollar per annum.

The Assayer's Guide; or, Practical Directions to Assayers, Miners, and Smelters, for the Tests and Assays, by heat and wet processes, of the Ores of all the principal Metals, and of Gold and Silver Coins and Alloys. By OSCAR M. LIEBER, late Geologist of the State of Mississippi. 16mo., pp. 118. Philadelphia: Henry Carey Baird. 1852.

In addition to, or rather in connection with, Mr. Baird's excellent series of practical Hand Books of the various Arts and Trades, he has, at a time most opportune, presented the public with the above concise and valuable work on assaying ores of the principal metals, gold and silver coins, alloys, &c., &c.

The immense mineral wealth of this country, recently increased in an unprecedented degree by the astonishing discoveries in California, makes the art of assaying a very desirable acquirement for every one engaged in any business connected with the metals, and in many cases altogether indispensable to those desirous of deriving the greatest advantage from a residence in that interesting portion of our land. It treats of assaying both by heat and the "wet" processes, and imparts a fund of information that even more elaborate works do not afford. It is truly a valuable publication, and one which cannot

be too extensively read or widely diffused. It should find a place in the hands of every man of science and research.

Frank Netherton; or, The Talisman. 16mo., pp. 202. New-York: Robert Carter & Brothers, 285 Broadway. 1852.

We can scarcely take up one of the Messrs. Carter's elegant little volumes, and look over the useful and entertaining subjects comprised in its pages, without an instinctive feeling of congratulation on our part that the public have such excellent caterers for the youthful mind as these favorite publishers. They have, during the past season, as our readers may have noticed, supplied some of the choicest gems for the young that can be found among the great variety of volumes before the public. Of this character is the interesting little work whose title we have above given. Beautiful in execution, elegantly embellished, inculcating the purest morals, and combining familiar instruction with noble examples, "The Talisman" will be read and re-read with deep interest. It should form one of the family books of every library in the country; and we trust the enterprising publishers will find a rich reward in their extensive sale of the work.

Journal of a Poor Vicar. Translated from the German of ZCHOKKE. 24mo, pp. 74. New-York: John S. Taylor, 143 Nassau street. 1851.

This is a captivating and really heart-thrilling little book—one of those rare books that the reader will never be willing to lay aside until its perusal is completed. It appeals to the feelings and touches the heart. The hopes, difficulties, trials, disappointments, and final happy results of a faithful and devoted pastor's labors in a country village are depicted in striking colors, with minute accuracy and transcendent skill. This book ought to be found in every family and Sabbath-school in the country. It will doubtless have an extensive circulation.

Arctic Searching Expedition: A Journal of a Boat Voyage through Rupert's Land and the Arctic Sea, in Search of the Discovery Ships under Command of Sir John Franklin. With an Appendix of the Physical Geography of North America. By Sir JOHN RICHARDSON, C.B., F.R.S., Inspector of Naval Hospitals and Fleets, etc., etc., etc. 12mo., pp. 516. New-York: Harper & Brothers, 82 Cliff street. 1852.

The deep and painful interest connected with the uncertain fate of this intrepid navigator invests every subject connected with the name of Sir John Franklin with a claim on our feelings and sympathies, deeply imbued with melancholy reflections. In this respect alone, the above volume would be read with the deepest interest; but, pregnant as are its pages with interesting facts, pleasing narrations, valuable geological and geographical information, and scientific research, the work will be justly regarded as possessing very strong attractions for every reader.

The appendix alone contains a large amount of valuable information in physical geography, climatology, the geographical distribution of plants north of the forty-ninth parallel of latitude, a list of insects, together with the Indian vocabularies, &c., &c., which, together with the neat and appropriate wood-cuts and diagrams, combine to render the volume highly instructive and exceedingly attractive. It deserves an extensive circulation.

Forester's Boys' and Girls' Magazine.

This interesting monthly for children and youth continues to be conducted with the accustomed ability of its editor, and embellished with all the taste and neatness of the publishers. As a cheap, instructive, and entertaining magazine for the young, it cannot be surpassed, and we most cheerfully recommend it to general patronage. Published by W. C. Locke & Company, 135 Nassau street, New-York, at one dollar per annum, payable in advance.

Saxton's Rural Hand-Books.

Among the most popular productions of the present time may be mentioned "The Rural Hand-Books" of C. M. Saxton, Esq. He has already issued "The Hive and Honey-Bee;" "The Domestic Fowl and Ornamental Poultry;" "Horses, their Varieties, Breeding, and Management;" "The Hog, its Origin, Varieties, and Treatment;" by H. D. RICHARDSON, one of the most popular English writers on the above subjects, and all

very fully and neatly embellished. With the present facilities for obtaining the best knowledge on all subjects relating to the farm, and at an expense so very trifling, no farmer should for a moment hesitate to supply himself with the information which these valuable little books afford. The publisher, with his accustomed liberality, will furnish any of the above works at the low price of twenty-five cents each, or one dollar for the entire series. They can be sent by mail to any part of the United States at a trifling expense. Mr. Saxton's address is 152 Fulton street.

Fancies of a Whimsical Man. By the author of "Musings of an Invalid." 12mo, pp 282. New-York: John S. Taylor, 143 Nassau street. 1852.

Those who have read the "Musings of an Invalid" will expect to find in this work something at which to smile, and in this they will not be disappointed. To draw off a "fit of the blues," or to exhibit the odd and whimsical of human nature, this volume is especially designed; and from it may be learned many profitable lessons in regard to some of the ultraisms of the present day. It will doubtless find many readers, particularly of that class who are charmed with the comicalities of Hood. It is published in Mr. Taylor's usual neat and attractive style.

OUR CORRESPONDENCE.

THE PLOUGH, LOOM, AND ANVIL—HARMONY OF INTERESTS.—*Messrs. Editors:* From the specimen of the *Plough, Loom, and Anvil* that I have seen, as well as from the design indicated by its name and general tenor, I think it would be greatly to the interest of every family to take your journal. I do not speak disparagingly of other agricultural publications; far from it, I take them: but yours, as established by your noble father, is more comprehensive in its design, and is better adapted to all classes of the community than any other. You excel in this one thing—you teach the *harmony of interests, a fact, a principle* all ought to know, but which, unfortunately, few understand; this is a great and sore affliction to every part of the community, but most of all to the *farmer*. I said this ignorance is afflicting to every part of the community. There may be one class whose interest it is to separate the various branches of productive labor as far as possible; if so, they are a class whose interest wars with ninety-nine hundredths of the community, and who ought not to have any influence. But, of all sufferers, the farmer is the greatest; and strange as it may appear, of all classes, he is most indifferent to his sufferings, and the most careless of the cause, and most regardless of the effects of that cause. In this particular he has always appeared to me as one of those strange phenomena in nature which are difficult to account for. In all other things he is shrewd enough, intelligent enough, and capable of discerning his own interest; but here *he*—or, rather, I should say *we*, for I myself am a farmer, though a poor one—seems to think that the more remote our

market is, the better we are off; we seem to think that the farther we send for a coat, a hat, a pair of shoes, a barrel of flour, and the more we pay for getting them here, the better business we are doing; so we think, if we carry our grain to the city, then have it made into flour, then send for it again, thus paying two freights, we are doing a nice business; and yet, Mr. Editor, strange as this stupidity may appear, and as ready as we farmers are to condemn such a course, when we meet together and talk over our grievances and disabilities, we still pursue this plan for years and years: as our fathers have done, so we do.

If the farmer would only see his real standing, his true relation to society, he would be equally amazed at his own thoughtlessness and the temerity of other classes who would exalt themselves above him. The farmer is the head and front of the community: he is the foundation of all prosperity, either in the commercial, or mechanical, or the literary world. Without him, the wings of the navy and the sails of the merchantman would cease to expand themselves to the winds of heaven. Without him, the busy hum of the factory and the machine-shop would be hushed in the silence of the grave; without him, the sparkling wit would grow dull; genius turn to stupidity; the pen of the historian would drop from his nerveless hand, the tongue of the orator stammer; literary men would cease to write, and lawyers to plead. The farmer sustains the same relation to the community that the sun in the heavens sustains to him; and as well might the community attempt to move without the farmer as the farmer attempt to grow his grain

without the influence of the sun. He is emphatically the *sun of their prosperity*; without him, all would be wrapped in one rayless, starless, cheerless night.

And yet, Mr. Editor, this is the man who toils for the people, drudges for the community; more patient of labor than the mule, more uncomplaining than the ox. He must be scorched by the sun, pelted by the storm, endure the heat of summer, the cold blasts of winter; rise early, toil the live-long day, and then—then feel himself happy to commit the effects of his hard labor to the non-producer, to send many, many miles to find a market, instead of making a market at home; and then, as the other part of this system, to send for those things he needs, and which ought to be produced in his own neighborhood. This is, as you and we all feel, the sad state of things at present; but the dawning of a brighter day begins to streak the distant hills, all radiant with the hope of a better time, not for the farmer *only*, but for *every* part of the community. No mistake can be greater or more fatal to the hope of all mankind, than to think that the different callings in life—to think that the plough, the loom, and the anvil clash in their respective interests. Far from it: they harmonize; and the nearer they are brought together, the greater the prosperity of each, and the happiness of the whole; and this, I repeat, is the peculiar feature of your journal, which gives it the preëminence over and above all others; this is the *great* truth, the *truth of truths*, which mankind ought to know, clearly understand, and fully comprehend. This is the mission which that *true* friend of the farmer—and, indeed, friend he was of all producing classes—has undertaken; and it is not too much to say, that to him (the late Colonel Skinner) the farmer and all other producing classes are more indebted and under deeper obligations upon this subject than any other man that has ever lived. For them he entered upon a perilous experiment, for them he toiled, for them he lived, and for them he died. It may be said of him, that to this work he consecrated his time, talents, influence, life and all. Upon it he entered with his whole soul; alone and single-handed he stood forth the champion of mutual interests, of mutual rights, of large and comprehensive views, showing that the prosperity of each and the happiness of all was best promoted as was seen gathering, in close and still closer proximity, in each and every neighborhood, the plough, the loom, and the anvil. And what has been the result? Thousands do already see this subject in its true light, and thousands more, like the man who was blind, begin to “see men as trees walking;” and still thousands more

are turning an inquiring eye and anxious thought to this subject; they feel that something is wrong. Rotteness in Denmark there is; and yours is the only journal that would put them right.

When leisure permits, I would like to follow out this “beautiful theory of deep philosophy,” and show its practical operations in each neighborhood, in each country, in each village; how the interest of each would be as distinct as the ocean’s waves, and the interest of all, at the same time, as harmonious as the waters of the deep.—
ENOCH REED.—*Locustville, Va.*

BUCKWHEAT.—As the November number of the *Plough, Loom, and Anvil* contains an article of much value on this valuable grain, I will give a sketch of our management of the buckwheat crop. We generally select an old pasture or meadow sod, and turn it under between the first and the middle of June; and if the ground is smooth, so that it can all be ploughed the first time, once is sufficient. Some days after ploughing, drag thoroughly; if the ground does not require ploughing twice, turn in and drag about the 8th or 9th of July, and sow from the 10th to the 12th. We generally sow twenty four quarts of seed to the acre; before sowing, wet the seed in clear water, apply a few quarts of common plaster, and stir it well, so that every grain is coated with plaster; this is all the manure that is needed in this vicinity. Generally in four or five days the grain is up, and needs no more attention until ripe, which is generally from the 12th to the 20th of September. When ripe, or so that a majority of the grains are brown, cradle and lay in swath; let it remain in swath till about the middle of October, or until after two or three hard frosts, (which makes it thresh much better;) take up the swaths the day before threshing, and leave them in bunches of moderate size. The bunches should stand upon the butts, without any bands around them. The practice of many, in taking up the swaths soon after cut, and binding them around the top, is entirely wrong. We find our buckwheat threshes best taken up the day before or the same day that we want to thresh. Some farmers in this vicinity are in the practice of sowing the last of June and first of July, but generally get their crop badly scorched by the sun. I would much rather run the risk of a frost than have the crop scorched by the sun.

For a crop of buckwheat I prefer that the field on which it is sown should descend to the north or north-west, as the sun will have less effect on the crop. Last year we raised fifty bushels of good buckwheat on

one and three fourths acres of land; the land somewhat stony, and averaging sixty pine stumps to the acre. Three years before, we raised over thirty bushels per acre on the same land. On another field, last year, we raised but about twenty bushels to the acre. This field faced to the south. Last season was very unfavorable for buckwheat in this vicinity, being unusually hot and dry. Our crop weighed but forty-five and a half pounds per bushel. In 1850, our crop yielded between thirty and thirty-three bushels per acre, and weighed forty-eight pounds per bushel. The kind of buckwheat raised was the little gray species. Thorough tillage is necessary to insure a good crop; the soil should be made as fine as an ash-heap. Land thoroughly tilled is particularly essential for all kinds of crops. The price of buckwheat during the months of December and January, in this vicinity, was 44 cents, or \$1.75 per hundred for the flour. A large amount was floured in this vicinity. By flouring the buckwheat, we save the bran, which is very nutritious for cattle and hogs, and is worth $12\frac{1}{2}$ cents per bushel. — ROBERT HOWELL.—*Nichols, N.Y., March 6th, 1852.*

MOUNTAINS AND RIVERS IN EAST TENNESSEE.—East Tennessee is that great valley made between the Cumberland Mountain and Black Mountain. The first-named mountain divides East from Middle Tennessee. This mountain is about fifty miles over its basis; on its heights run various streams of water, amongst which is a considerable river, the *Caney Fork of Cumberland*; and along the banks of the same, and other creeks, are found many fine farms, well adapted to the growth of grass, oats, melons, buckwheat, corn, &c. This mountain affords an inexhaustible grass range for cattle in summer; it is clad chiefly with chestnut timber, which bears abundantly, and which the inhabitants gather and carry off to market, besides affording a winter food for hogs. Deer, turkeys, wolves, panthers, and other wild animals, are plenty, and are hunted by the inhabitants. Running along the south-eastern side, and parallel to it, is *Walden's Ridge*. This ridge lies about one hundred and fifty miles in length, in East Tennessee, and for beauty is not surpassed if equalled by any mountain in the world. When viewed at a distance—and it can be seen from nearly every eminence in East Tennessee—its uniform height on the apex, its astonishing straight direction, gives it an expressive picturesque of the comb of a building. This mountain is chiefly clad with pine and mostly of the spruce species. On its western declivity, and near the head of a large creek, called

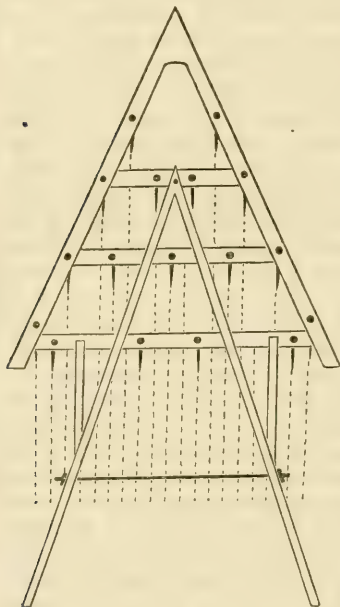
Daddy's Creek, is *Spencer's Hill*, which acquired the name from the following circumstances: Earliest amongst the pioneers of that wilderness country was a man by the name of Spencer. He and his comrades, in hunting, often came in conflict with the Indians, but were usually on friendly terms with them. The Indians, however, became tired of Spencer, and sought his life. Spencer was aware of their new movement; and, after one day being hotly pursued by the savages, Spencer ascended this hill, and took his station upon a large rock, from which he could see the surrounding valley, in order to catch glimpses of his approaching foes. Whilst here, and unobserved to him, an Indian stealthily approached near enough to shoot him, which he did; and hence, *Spencer's Rock* on *Spencer's Hill*. I have visited this rock, and had been told that footprints of human beings and those of animals could be plainly seen in the solid surface of it. I had no guide; I was unable to discover any traces of the kind. A visit to the rock, with the reflection of Spencer's fate, called forth from me a thousand romantic but solemn twichtings. Both these great mountains abound in rich, spouting springs of cool and brittle water, many of which, after finding the surface, and collecting a smart rivulet, dash over some dizzy height of sometimes one hundred and fifty feet, and by the time the element reaches its destination in the abyss below, is changed into spray, there collecting a large pool until some neighboring gorge shall admit it to pass off and seek a stream that shall bear it to the Father of Waters. About these springs are always found, in large quantities, rattlesnakes of huge size and alarming appearance, dotted and striped. In this great valley are other large mountains: the Clinch, the Pine, the Paint, Bays, the Chilhowee, the Nolachucky, the Sand, the Brush; and last, though not least, the *Devil's Nose*, lying in Hawkins county, is perhaps one of the greatest pieces of Nature's handiwork; it is about two miles in length, and rises abruptly at the east end, and is somewhat shaped as its name denotes. Its precise altitude has, I believe, never been taken, but it is several hundred feet above the surrounding hills, and commands from its top a pleasing view of the rivers, farms, and landscapes of the country. In the bluffs or rock in this mountain, thousands of bees lay up their precious treasure, far out of the reach of the most alert robber. — A. L. BUREM.—*Mill Bend, Tenn.*

A GOOD HARROW.—*Messrs. Editors:* I have an iron tooth-harrow of triangular shape; the side pieces seven feet long; width from tooth to tooth, five feet eight

inches, with three cross pieces of the same thickness and strength as those of the side, eighteen inches apart, and well tenanted into the side; the whole harrow containing twenty-three teeth, set as near ten inches apart as was possible in the frame, breaking joints as nearly as possible, the teeth running each side beyond the upper cross frame piece about six inches.

This harrow has a firm set of finished handles. I hold it with delight, harrowing, in crossing every dead furrow, perfectly well.

I constructed the harrow, and never have wished it altered a "hair's breadth." The following is an outline of the same:



I have wooden teeth harrows that I use more frequently, that are similar in their construction. My wooden one is exactly six feet from corner to corner tooth, with which we affix three suitable drills, three feet apart, on level ground, which answers admirably well for planting our beans, potatoes, sometimes corn, &c., which is a great saving of labor; and in most cases it levels off the ground by those drills carrying a quantity of earth before them, and distributing it in holes and hollows, the earth becoming better pulverized to cover.

My harrow was constructed fifteen years ago, and has been used ever since; and there has not a single tooth nor any joint in the harrow started one hair's breadth. I invite people to see it, and they will find

it in every particular as described.—*ABD-NEGO ROBINSON.—Portsmouth, N. H.*

THE USE OF TAR IN SHEEP-HUSBANDRY.—*Messrs. Editors:*—Having had some experience in the management of sheep, I propose to say a few words, through the medium of your paper, on the use of tar as a preventive of disease.

I have been in the practice of feeding to my sheep four or five gallons of tar to each 100 sheep per year. My plan of feeding is to mix my tar with salt, by scattering my salt in a narrow trough and pouring the tar upon it. In that way, I have no difficulty in getting the sheep to eat it. In addition to this, I apply a little tar to the nose of each sheep, two or three times during the warm season, and as much oftener as I have occasion to handle them. This I deem important, as it has a tendency to keep the gad-fly from troubling the flock.

This is the only article that I have used to prevent disease in sheep, for a number of years in which I have been engaged in wool-growing. The result of this practice has been that I have not lost one sheep annually for each 100 that I have kept.

Last May, when I sheared my sheep, I had over 600. I have sold 100 since, leaving over 500 now on hand, and I am not aware of having lost but one since; and what caused its death I am unable to tell, as I knew nothing of it until I found its carcass in my field, nearly eaten up.

I ascribe the uniform health of my flock to the free use of tar.—*WM. S. WRIGHT.—Granville, Vt., February 26, 1852.*

SUBSTITUTE FOR CORN AS FOOD FOR HOGS.—*Messrs. Editors:* In a former number I have spoken of the advantages of rye, barley, and other grains, as substitutes for corn; I now propose to say a little about squashes as a substitute for corn by feeding them to hogs.

It is evident that (in this part of the country at least) where our corn crops are cut short, or where our land is naturally so light that we cannot realize a full crop, we should resort to every means within our reach to help out the corn crop, more especially where we can raise other articles of food for stock cheaper than we can raise this.

I consider the squash crop one of this kind. A small piece of ground will yield a sufficient quantity for a common stock of hogs; say a quarter of an acre for twenty or thirty hogs. The best plan is to plant at intervals of three weeks, and by so doing you will be sure to have them in regular suc-

cession. By taking pains to plant and cultivate a small patch, a man may keep his hogs on them from the middle of June until the vines fail, or, at least, until his corn comes, and thus save a vast amount of his former crop.

I usually have the squashes gathered in the evening, chopped up, and put into a large pot or boiler, with all the slops, &c., that have been collected during the day, and have them cooked at night, which I have found to be the most convenient time. I also have a little salt thrown into the pot, and some ashes occasionally, which I consider good for worms in the swine. The boiler is suffered to remain on the fire all night, and next morning the squashes, being warm and thoroughly cooked, are taken out and put in a trough for the hogs. They appear to be more fond of this food than any thing else ever fed to them.

There are also other advantages in raising a squash crop in addition to the one above spoken of; and one of them is—they come on at a season when the corn is scarce, if scarce at all; they also come on at a time when no other crop matures. There is also an advantage in the use of them, in the manner above spoken of, aside from the nourishment they afford the hogs. In eating and fiercely crowding each other around, they get effectually besmeared with the greasy water, which effectually prevents the mange, and helps to keep off the lice.—WM. C. DICKSON.—*Milledgeville, Ga.*

PROSPECTS FOR FRUIT IN CENTRAL NEW-YORK.—THE PEACH BUD.—The present prospects for apples, peaches, &c., in this section of the country, are good; though, if the weather continues as cold as it has been for the past few days or weeks, we cannot expect much fruit or any thing else in the line of vegetation, for the cold winds and rains put a perfect damper on the growth of almost every kind of vegetables raised in the northern climes. We shall, however, unquestionably have apples, and similar fruit, in abundance. Both the apple and peach trees are well loaded with buds, and if nothing should befall them between now and June, the country will be pretty abundantly supplied with fruit. Cold seasons with abundance of rain, we have noticed, are almost always favorable to the growth of apples, as well as other fruit of a like nature.

A word in relation to the *peach bud*. Many of our agricultural periodicals have contained paragraphs setting forth that the peach bud was killed, and for this reason: *Mercury* fell below that point in the thermometrical tube, which always, as these

paragraphs represent, betoken that no peaches will appear on the trees, for the reason that the weather is so intensely cold that the germ or centre of the bud is destroyed; therefore, there is no chance for the young fruit to commence its growth, or, in other words, the fruit bud itself is killed. It is said that the bud of the peach is destroyed when mercury falls 12 degrees below zero. We do not believe this, for we do know, from observation, that it has dropped far below that point, and still peach buds, with us, are alive, and in sound condition; that is to say, the most of them are in that state which shows that they are far from being dead. We took a sharp knife and went into the operation of examining them. The following is the method which we adopted as our course of dissection: We commenced at the apex of the bud, and cut thin slices from it, (very much the same as mistresses "slice up" cabbages for cooking,) until we cut down to the bottom of the bud. When we found a black spot in the centre of the bud, we pronounced such a bud dead, good for nothing; but when we found it green and lively throughout its whole organization, and learned further that there was no dark-colored spot in the centre, we then said that the bud was in a sound condition, and would grow into a peach if nothing happened to it. One fifth part of the fruit buds may be killed in this part of the country; the remaining four fifths will be sufficient to load down the trees abundantly with peaches, if they do well.

The buds, it is well to say, are affected on some trees more than on others. The cause of this may be attributable to the kind of peach. Some of the trees which we examined were early, and others were late.—W. TAPPAN.—*Baldwinsville, N. Y., May, 1852.*

THRESHING MACHINES.—*Messrs. Editors:* Since I wrote you on the 15th January, we have been trying a threshing machine worked with eight horses, and made in Wisconsin, which has disappointed me by getting continually out of order. It is too confined, and the riddles do not clean themselves. So far we have never been able to thresh 400 bushels in the day.

From Alton, in Illinois, machines of a much better class are supplied, easily threshing and cleaning 600 bushels per day. Being larger and more open, they do not clog; and being built stronger, they do not get out of order. I very much prefer these Alton machines, and strongly recommend them. Your obedient servant, P. Prescott.—*St. Peter's, Minn., Feb. 2, 1852.*

EDITORS' JOTTINGS.

NORTHERN TRAVEL.—The season of summer travel has now commenced, and many of our friends, North, East, South, and West, will be visiting different watering-places in quest of pleasure or health; and we have thought we should be doing the public a service by calling attention to some of the best routes diverging from New-York. Our "Jottings" for this month contain notices of several routes of travel, which will not escape the observation of the careful reader.

NEW-YORK AND ERIE RAILROAD.—This is the most magnificent enterprise of the kind in America, if not in the world. The entire length of the road from New-York to Dunkirk is 454 miles, with several branches, some of them long ones, and all belonging to the same Company. A branch from Elmira to Canandaigua, connecting with the Albany and Buffalo route, furnishes a speedy transit for passengers from the great West coming to New-York, and is already extensively patronized. The Erie Railroad is a monument of what can be accomplished by perseverance and enterprise. It has contended against the most imposing obstacles, but has proudly triumphed over them all.

The road has the widest track and heaviest engines of any road in America; and all connected with its management, whether officers or subordinates, are gentlemen of standing and experience, eminently careful of the safety and comfort of their passengers. A person in quest of pleasure would find enough in the romantic scenes on the line of this road to compensate him amply for a transit over its entire length.

THE POST-OFFICE ESTABLISHMENT.—Several columns of the Washington *Intelligencer* are occupied with an interesting historical account of the growth and operations of the United States Post-office establishment, from a member of the Department.

The first mail route on this side of the Atlantic was put in operation by the colony of New-York, Governor Lovelace having established, in 1672, "a post to go monthly between New-York city and Boston and back." The colony of Massachusetts created the first post-office, the General Court having, in 1677, appointed John Hayward "the scrivener," at Boston, "to take in letters and convey them according to their direction." In 1711, the mails ran between Boston and Maine once a week, and once a

fortnight from the former place to Connecticut and New-York. In 1717, there was a weekly route from Boston as far south as Williamsburg, Virginia, and in 1727, a fortnightly one between Philadelphia and Annapolis. Sixty-three years later, in 1790, "the post-roads in the United States did not exceed in length one thousand miles, consisting of a long zig-zag route from Wiscasset, in Maine, via the principal towns on the Atlantic sea-board, to Savannah, in Georgia, with a few connecting cross-posts, on no portion of which was the mail conveyed oftener than tri-weekly, and on a part of it but once a fortnight. The entire annual cost of the service was \$22,702. The number of post-offices was seventy-five, and their gross yield \$37,395 per annum." At the period referred to, there were but ten offices yielding a revenue of over \$1000 per annum, viz.: Philadelphia, New-York, Boston, Baltimore, Richmond, Petersburg, Alexandria, Fredericksburg, Norfolk, and Charleston. The amazing rapidity with which the post-office system has advanced to its present state, is shown by the fact that in 1851, or only about sixty years subsequent to the date last mentioned, the length of routes in operation was 196,290 miles; the annual cost of transportation thereon \$3,421,754; the gross revenue of the Department, \$6,786,498; and the number of offices, 19,604. The Department has on its registers over six thousand mail routes, and nearly as many mail contractors. The enormous augmentation in the size of the mails is referred to. Only twenty-five years ago, the boot of a single coach sufficed for any mail leaving our principal cities. Now, at New-York, Washington, and other of our large commercial towns, they amount to several tons each day.

EMISSION OF ROOTS, CUTTINGS, LAYERS, &c.—A correspondent of the *Gardener's Chronicle* observes: "I have cut cucumbers and laid the stalks in water by the side of hot water pipes in a vinery, and they have emitted roots freely. In this way I have kept cucumbers in good condition longer than by any other method. Some may imagine that the fruit would shrivel; but with me they are as solid as if they were growing on the plant. If, for want of time, or ground not being ready, my Brussels sprouts or broccoli get too long in the leg, I always twist the stalk, and bring the root upwards. I find they root freely, where the stalk is twisted, and always make better plants than when planted in the ordinary

way, with their long legs: this is from sixteen years' practice; and I believe it to be a good plan always to twist the stalks of all the Brassica tribe, *except cauliflowers*, when they are planted out. They make about three times as many roots to support the plant, and those extra roots are near the surface, where they are most useful."

We have frequently tried the above method on cabbage with success, as also with the cuttings of wall-flowers, &c., and in layering roses; but why there should be an exception with cauliflowers, we do not understand, and hope some of our agricultural friends will give us their views upon it.

NEW-HAVEN RAILROAD.—The connection of the beautiful and romantic city of New-Haven with the great metropolis was an event which was hailed with pleasure by hundreds and thousands in both cities. It gave a new impetus to the numerous towns and cities on the line of the road, many of which, in consequence, became the abiding-places of hundreds of our Gothamites. The travel between New-York and New-Haven over this road is immense, besides two trains a day to Boston via Hartford, Springfield, and Worcester, which are liberally patronized. Indeed, during the late cold winter, when the Sound was entirely frozen, and navigation wholly cut off, the New-Haven Road afforded the only medium of conveyance between Boston and New-York for passengers, freight, and the United States mails. Several suburban villages are now located upon this road, and its Directors are endeavoring to meet the growing demand for increased facilities of travel by laying a double track over its entire length, and providing new means of entering New-York city, by bridging the Harlem river, for which a charter has been granted. Its stock is believed to be the best in the Union, and from the day that it commenced business, this road paid its stockholders a good per centage on their investment. It has no competitor between the two cities but a steamboat, and those who regard time, comfort, and safety, do not hesitate which to choose. The New-Haven road is proverbial for all three of these essential elements of pleasure in travelling.

MANUFACTURE OF HORSE SHOES BY MACHINERY.—A machine for this purpose has recently been invented by Dr. Hobson, of Leeds, England, of which the *Intelligencer* says: "We had the pleasure of seeing the machine at work a few days ago, and, without making pretense to technical acquaintance with the subject, we must acknowledge both obvious advantages in the process, and

great beauty of operation. The iron is in bars rolled in a peculiar manner; they are cut into suitable lengths, and the superfluous parts cut off by machinery, and the ends of each piece rounded. Any harsh edges left by the cutting machine are ground down, and the pieces are then put on a moving rack, which drops them one by one at the mouth of the furnace, and they are carried gradually through the flame and radiating heat of the furnace without touching the coals. By a new movement at the other end of the furnace, the pieces are passed successively to the block or die, where each is bent and stamped by a very beautiful combined action of the machine, and the horse shoe, perfectly shaped, drops into the trough to be cooled. The nail-holes are afterwards punched in the cold metal, and it is not necessary again to heat the shoe, so that the hardening effect of hammering (or stamping) is not lost. The advantages of the machine, in addition to the economy of labor, (for the apparatus for heating and bending would turn out shoes for one hundred and fifty or two hundred horses in an hour) are, that the shoes are formed exactly to a predetermined shape, which can be varied, but always with certainty, to particular requirements. Dr. Hobson insists upon the advantages of a level tread for the horse, and the patent shoe is made to that purpose, (exceptional cases omitted.) It is much lighter than the hand-made shoe, but in no respect inferior in strength; and it is so formed that the nail heads are protected; and by this means, and the support of the 'clips,' the liability to cast a shoe is diminished."

MORRIS'S SALE OF IMPROVED CATTLE.—We perceive from a catalogue, recently received from Lewis G. Morris, Esq., that his third annual sale of improved breeds of domestic animals will take place at Mount Fordham, Westchester county, on Wednesday the 9th day of June next, at 12 o'clock. We desire to call particular attention to the subject, as Mr. M. is one of our most distinguished breeders of domestic animals, and the most successful exhibitor at the late State Fair, as will be seen by reference to the proceedings of the State Agricultural Society. Mr. Morris's catalogue numbers about fifty head of horned stock, including a variety of ages, both male and female, consisting of Pure Breed Short-horns, his entire herd of Ayrshires, and a few Devons. Also, Southdown Buck Lambs, a few Ewes, and a lot of Suffolk and Essex swine. This sale will afford purchasers the best opportunity that has been offered to procure animals of the finest quality, as Mr. M. contemplates reducing his herd previous to his intended trip to Europe,

which will probably prevent another sale until 1854. All who desire to improve their stock will now have an opportunity of doing so, which it will be well to improve.

RAILROADS IN THE UNITED STATES.—John C. G. Kennedy, Superintendent of the Census, has recently prepared for Jules Cartin, Minister of Public Works of Paris, an interesting statement in regard to the railroads of the United States. Mr. Kennedy estimates the length of railroads completed and in contemplation, as follows: "The number of miles of railroad in operation in the United States, January 1, 1852, was, as nearly as can be ascertained, 10,814½. At the same time there was in the course of construction an extent of railroad amounting, according to the most reliable estimates, to 10,898½ miles. By far the greater portions of the lines commenced, but now incomplete, will be finished within the ensuing five years. The length of railroad brought into operation since January 1, 1848, is 5,224. Within the last year, 2153 miles have been finished. Nearly all the lines in progress have been commenced since 1848. It is supposed that from 1000 to 1500 miles additional to the 10,898 now known to be in progress, will be put under contract during 1852." Mr. Kennedy thinks that in 1860, the United States will be traversed by at least 30,000 miles of railroad. The average cost of building railroads, per mile, in New-England, is about \$45,000; in New-York, Pennsylvania, and Maryland, \$40,000. In many of the Western States, the cost of grading does not exceed \$1000 per mile. The cost of the railroads in operation in the United States, Mr. Kennedy assumes to be \$348,000,000.

MANUFACTURE OF SALT.—A subscriber in Virginia recently wrote us for information respecting the manufacture of salt by evaporation. We submitted his letter to a friend well "posted" on those points, who, under date of April 24th, writes us as follows:

"I have your note of this morning, with that of your correspondent enclosed. I presume from the pencil-mark beneath his signature that the writer is a resident of Accomac county, Virginia. If so, the salt water he is using is probably sea water, and contains so little chloride of sodium as to render it unprofitable for the manufacture of salt at the present low price of that article. He speaks of the pickle being stronger than that of the Syracuse salines. Forty gallons of the Syracuse brine will

make fifty-six pounds of salt; or, say a gallon of brine will make twenty-four ounces of salt, which is three ounces of salt to every pint of brine. The brine of the salt-mines of Saltville, Virginia, yields two pounds of salt to the gallon, or four ounces to the pint, and is the purest salt in the world. I will write the communication you desire, if you can inform me in reference to the quality of the brine. I will endeavor to send you a communication relative to the manufacture of salt, in time for your May publication.

"Yours truly, E. M."

[Our friend in Virginia will see what information is needed by our correspondent, and if he will send it to us, we will guarantee an answer that will be of public interest and utility. The promised communication from our correspondent had not reached us at the time of our going to press.—Eds. P., L., & A.]

FAIRBANKS' PLATFORM SCALES.—We have been much gratified with an examination of these scales, which seem to be adapted to every required operation of weighing. The universal confidence felt in their accuracy and perfect adjustment is such, that they are now regarded as the standard from which there is no appeal. We doubt if they are equalled in this or any other country. The general depots are 89 Water st., New-York, and St. Johnsbury, Vt.

FALL RIVER ROUTE TO BOSTON.—The season of summer travel, which has already commenced briskly, attests the popularity this route over any other between New-York and Boston. The Company has made extensive improvements on their boats, the Empire State and Bay State, putting in new engines, painting, gilding, and refurnishing throughout. These beautiful boats, which have always been the handsomest in the world, now really *excel themselves!* With such splendid boats, and such accomplished commanders as Captains BRAYTON and BROWN, the Fall River route must always be the most fashionable and popular, as it is the most comfortable and expeditious of any route of travel between the two most enterprising cities in America.

INTERESTING ARTESIAN WELL.—There is an Artesian well at the cotton factory of Joel Matthews, in Dallas county, Ala., which is 710 feet 10 inches in depth, and which discharges 600 gallons of water per minute, or 864,000 gallons in twenty-four hours, exceeding any well in America. The water flows out with such force, that if pieces of stone as large as an egg, or a half

dollar, are thrown in, they are immediately ejected. The sand, gravel, &c., made by the auger, are also forced out by the water, which is perfectly clear, limpid, and pleasant to the taste. The diameter of the well is a little over six inches, and it is Mr. Matthews' intention, as soon as he has had it tubed the entire distance now completed, to have the boring continued to a greater depth. This will make it, it is believed, the most wonderful Artesian well in America.

FORMATION OF A NEW AGRICULTURAL SOCIETY.—Wm. L. Crawford, Esqr., under date of Locust Grove, Hancock Co., Va., April 20th, 1852, writes us as follows:

"We have, within the past month, organized an Agricultural Society in our little county—little in territory, but great in soul. By one of the by-laws, persons obtaining premiums for cereals or roots are required to present to the society, through the Recording Secretary, a written account of the *modus operandi* in the cultivation of the premium article. Such of these accounts as may be deemed worthy of publication, I shall take pleasure in forwarding you, that they may appear in the *Plough, Loom, and Anvil*."

[We shall take great pleasure in receiving and laying before our readers any articles our obliging correspondent shall forward us. We are very glad to receive such articles, and wish our readers generally would exercise a greater freedom in making known the results of their experience in farming or gardening through our pages.—EDITORS.]

SEVENTH CENSUS OF THE UNITED STATES.—We have been much gratified with an inspection of the "Census Returns complete" of the State of Maryland; and we cannot let the occasion pass without a tribute of admiration to this truly remarkable work—remarkable alike for a vast amount of information condensed within a narrow compass, and for the singular lucidity with which that information is presented.

The volume before us contains not only the most complete statistics, but also a concise historical, geographical, and geological description of the State, and of each particular county. It was prepared, that it might be submitted to Congress as embodying views suggestive of the manner in which the Census Returns of the United States should be presented, to render them of the greatest utility.

The public in general entertain but vague and imperfect ideas of the value of statistics; yet they is to the statesman what a well-

kept set of books are to the merchant—an indispensable reference in his most important transactions.

But to the general inquirer, statistics are exceedingly interesting. The farmer, the mechanic, and all others engaged in the multifarious pursuits by which man earns his bread, can, by turning a few pages, ascertain the number occupying his own peculiar field of labor, the amount of capital employed in it, and the number, variety, and value of its products.

Some opposition exists, we understand, to the publication of the Census, as proposed by Mr. Kennedy, and approved by the Secretary of the Interior. Without pausing to refute (as might easily be done) the objections which might be urged against it, we will venture to predict that, when completed as projected, the work will be not only of incalculable value to the country, but will prove a lasting and magnificent monument to the power, the wealth, the grandeur and social happiness resulting from our free institutions.

HUDSON RIVER RAILROAD.—It is only a short time since this road was opened through to Albany, and already the Company is running *seven* trains a day between the two cities! This, on the very banks of a river whose boats are famed the world over for speed and comfort, indicates an amount of travel and prosperity unparalleled. Distance is almost entirely annihilated by this road, as the cars pass over the entire route (160 miles) in about four hours! The road passes sometimes on the river's bank; sometimes over its surface, some distance from the shore; sometimes through tunnels under huge mountains; and is rich in interesting scenery from one end to the other. The arrangements of the Company to guard against accident are admirable, and the passenger, though frequently moving at the rate of forty miles an hour, feels a conscious security which obviates any cause of alarm. Persons from a southern point, in quest of the healthful waters of Saratoga Springs, can have an opportunity of confirming all that we say in relation to the excellency of this road.

RUSSELL COMSTOCK'S THEORY OF TERRA CULTURE.—We have felt a considerable interest in the lectures of Mr. Comstock on his newly discovered theory of Terra Culture, and have no doubt but that a general adoption of it would result in a vast increase of our agricultural products. We have attended one lecture, and can assert, confidently, that the man who listens to Mr. Comstock attentively for a couple of hours

will not regret paying the dollar which the privilege will cost him.

The following letters from Professor Norton and Professor Johnson, Professors of the Science and Practice of Agriculture, of the Albany University and Albany State Normal School, fully express our views, and are highly creditable to Mr. Comstock's discovery:

ALBANY, N. Y., Jan. 29, 1852.

MR. RUSSELL COMSTOCK.—*Dear Sir:* I have listened to your lecture upon the principles of Vegetable Physiology in certain applications, and have been much interested. The record of experiments adduced seem to uphold your views, and I shall certainly test them for myself during the coming season. Should your theories prove to be entirely correct, they would afford us satisfactory explanations of many phenomena that are as yet but imperfectly understood.

I am, sir, very respectfully yours,

JOHN P. NORTON.

ALBANY, N. Y., Jan. 29, 1852.

MR. RUSSELL COMSTOCK.—*Dear Sir:* After attending your lecture on a newly discovered principle of "Vegetation," I do not hesitate to say that, judging from the evidence you have presented, it is a genuine law of vegetable physiology; a law newly discovered, and promising to do more than any hitherto discovered, in elevating agriculture to the rank of an exact science.

Your discovery seems to possess all the characteristics of a law of nature; being simple, conflicting with no known principles of agricultural science, and apparently capable of explaining many of the constantly discrepant results of even the most enlightened experimenters.

If, as it seems, it be true; if the most rigid experimental investigation of its merits confirm it fully, the benefits that must come from its application can scarcely be exaggerated.

I hope the proverbial ingratitude of republics will not deprive you of the reward due to your merit, nor the world of so promising a discovery. Yours, &c.

SAMUEL W. JOHNSON.

CAMDEN AND AMBOY ROUTE BETWEEN PHILADELPHIA AND NEW-YORK.—Our pages have so often borne testimony to the superiority of this route over any other, that it is almost superfluous to say any thing more. We must add, however, that the excellent boat "JOHN POTTER," running between Amboy and New-York, has recently been thoroughly refitted for the summer travel. It is newly painted, gilded, carpeted, and renovated throughout, and, with its gentlemanly commander, CAPTAIN SIMPSON, is a real luxury to the traveller. A trip on the

road in the Company's beautiful cars, from Philadelphia to Amboy, and a passage on the John Potter to New-York, give a pleasing variety; and the scenery which the traveller will behold as he sails along Staten Island, and up the Bay to the city, is the most beautiful in the world!

HOW TO MEASURE AN ACRE.—The following numbers, multiplied together, will give an acre. If two, three, or more acres are to be set off, multiply *either one* of these factors by that number. These dimensions being measured off on lines at right angles to each other, you will have the acre required. We give these dimensions both in *rods* and *yards*.

1. *In rods.*

80 by 2; 80½ by 3; 40 by 4; 32 by 5; 26⅔ by 6; 20 by 8; 16 by 10; 13½ by 12.

2. *In yards.*

440 by 11; 242 by 20; 220 by 22; 161½ by 30; 137½ by 35; 121 by 40; 110 by 44; 93½ by 52; 88 by 55; 80½ by 60.

A four-rod chain consists of 100 links, each 7.92 inches long, and extends 22 yards, or 66 feet.

BRIDGING THE SUSQUEHANNA RIVER.—Our February number contained an article on the importance of constructing a bridge over this river at Havre de Grace, in Maryland, to facilitate the travel on the Philadelphia, Wilmington, and Baltimore Railroad. We are pleased to learn that the Legislature of Maryland have had the subject under discussion, and that ardent hopes are entertained of the passage of the measure. We wonder that the Legislature of so enterprising a State should stand in the way of an object whose attainment would prove so beneficial to the public generally, no less than to the State itself. This road is the most important link of travel between the South and the North, and the want of a bridge at this point is felt by the hundreds of thousands who every year pass over it. Let the bridge be built!

CLIMBING ROSES.—The *climbing* sorts of roses may be introduced to good advantage by training them to trellises of the pillar form. In the Royal Botanic Garden of Edinburgh they are trained to *living* supports. These consist of straight poplars, closely pollarded, so as to show a few branches at the top only.

The *Banksian* rose is one of the finest climbers, but has one peculiarity, viz.: the shoots of one year's growth only produce flowers. The pruning, consequently, must be performed at midsummer, that time may be allowed for the development of new shoots; as late pruning prevents the formation of flower-buds the succeeding year.

The Plough, the Loom, and the Anvil.

VOL. IV.

JUNE, 1852.

No. 12.

SECOND LETTER TO A COTTON PLANTER OF TENNESSEE.

DEAR SIR :—You agree with me, that if the spindle and the loom *could* be transferred to the cotton fields, your condition and that of your fellow-planters would be greatly improved, because you would thereby be enabled to trade directly, and without the intervention of Lowell or Manchester, with the producers of pork and beef, horses and mules, at the Northwest ; of fine cloths, furniture and books at the North ; of silks and tea in China ; of coffee and sugar in the West Indies and South America ; and of the thousand kinds of manufactured goods now produced in Europe, that at present cannot be produced at home : but you are unable to see how such a measure is to be carried out. Where, you ask, is the capital to come from ? It was with difficulty, as you say, that a few mills were established, and many of them have already stopped, while scarcely any have yielded profit to their owners. Exactly so ! What you describe is precisely what might have been anticipated when you repealed the tariff of 1842, under which the domestic consumption of cotton more than doubled in five years. With all the advantage of cheap corn and cheap cotton you cannot compete with the North, and yet this is precisely what the tariff of 1846 has forced you to try to do. Had the tariff of 1842 remained in operation, the Yankees would before this time have found a demand for fine cottons, that would have enabled them to abandon the manufacture of coarse ones, and before this time you would have placed yourselves in a position to make the latter cheaply, while the domestic demand would at this moment be absorbing a million of bales of cotton, and the day would be now not far distant when you would be exporting yarns to the various countries of Europe, and cloths to South America, China and California. Instead of this, you and they have been contending for a market that was from year to year absorbing less cotton, and the question has been which of you should crush the other ; and the result is now seen in the fact that the consumption of Southern mills has already diminished one half, while that of Northern ones has not diminished over twenty per cent. You have thus crushed your own people in the effort to crush the Yankees, and such has been the effect of every measure the South has thus far adopted with a view to that object. It is yourselves and not the Yankees that really need protection. Let things remain as they are, and you never can trade with the world except through the mills of Manchester and Lowell ; but determine to protect yourselves in your efforts to draw the spindle and the loom to take their natural places by the side of the plough and the harrow, and the day of emancipation from the control of both will then be not far distant.

You ask, however, where is the capital to come from ? In answer, let me call your attention to the fact that all the materials of the mill abound in

your immediate neighborhood, and that they need but the application of labor to put them into the form of a house fitted to contain machinery. Look on your own plantation, and you will find an abundance of both stone and wood. Look again, and you will see that you waste annually as much of the labor of men, horses, carts and wagons, as would cut and fashion a vast deal of timber, and quarry a vast quantity of stone, and haul the two to the place at which the mill should stand. Look next among your fellow-planters and see if it is not the same with all of them, and then determine if you could not by an united exertion build a mill-house out of the savings of a single year, thus costing you not a single dollar. That done, you would need machinery, but you would find abundance of persons willing and anxious to furnish that, provided it was known that the planters had at length fully determined to persevere in their efforts to relieve themselves from the system which looks to giving them but one market in which to sell their cotton, and one in which to buy their cloth. It is the policy of Manchester to impress upon you the idea that the cotton trade requires a vast capital, but as carefully do the Manchester men avoid to call your attention to the fact that the whole amount at this day invested in the cotton machinery of England is not three times as much as your annual loss for want of direct trade with the world. In 1834, Mr. McCulloch estimated the value of buildings, machinery, and stock of cotton on hand, at only twenty millions of pounds, or ninety-six millions of dollars, and if it has doubled in the intermediate period the present amount is but one hundred and ninety-two millions of dollars; and that is certainly not three times as much as you will lose this year by selling your crop at 7 or 8 cents, when you might have 12 or 13, and you would have far more even than that if you would but determine to have direct trade with the world. Your bales will average this year probably 470 pounds, and this at 5 cents a pound will give \$23.50 per bale, making on a crop of three millions, more than seventy millions of dollars; and the loss is destined to become far greater than this, if you persist in maintaining a system that renders it impossible that your crop should have more than one outlet, and that in the keeping of the men of Manchester.

Seventy millions of dollars would seem to be a large sum, and yet it is trivial when compared with the real loss you suffer from your persistence in the determination not to adopt measures of counteraction to the oppressive system by aid of which those men constitute themselves the distributors of your products. I have now before me, in the London *Economist* of last month, a comparative view of the prices of cotton wool and cotton yarn, by which it appears that the cotton which sells at 4½d. per pound in Manchester, becomes worth as soon as twisted 9½d. That pound has not yielded the grower on his plantation more than seven cents, and yet the German maker of cloth cannot obtain it in Manchester for less than nineteen and a half cents! Look, I beg of you, at this division. For the use of your land, your horses and your people, and for your own services for a year, you have seven cents; while the monopolist mill-owner, who buys his wool on Monday and turns it out on Tuesday or Wednesday, receives twelve and a half, out of which he has to allow a small amount for waste, and to pay a most trivial sum for the labor of the people who perform the work. You have here the secret of the small consumption of cotton. You have first to pay for transporting it from the place of production, and in its most bulky form, to Manchester; next you have to pay innumerable commissions and expenses; next, the spinner must have twelve and a half cents per pound for converting it into yarn; next, it must pass through the hands of the man who makes it into cloth;

next, it pays commission on sales and purchases in Manchester; next, freight to New-York or Philadelphia; next, commissions, rents, and charges of all kinds in those cities; next, transportation to Indiana or Illinois; and the result is, that the pound of cloth which leaves your plantation at seven cents, sells to the consumer at forty, fifty, or sixty cents; and yet all the capital required for converting it into cloth *has not been one tenth part as great as the capital you have employed in its production, and all the labor required has not been one quarter as great.* Nevertheless, for this trivial quantity of capital and labor the consumer of your cotton pays three, four, or five times as much as you receive for the large amount of capital and labor you employ; and it is for the purpose of compelling you to continue to receive that small portion, and to permit the Manchester man to live at your expense, that Great Britain labors to impress upon your mind the advantages that must result to you from having only one market in which to sell your cotton, and one market in which to buy your cloth and your iron.

Look, now, around your plantation, and you will see that by an economical application of the labor power upon it, you could in a single year furnish as much of it as would be equal to your share of a mill capable of converting into yarn a very considerable portion of the whole crop of your county, and that you could in every subsequent year furnish as much labor as would perform the work of conversion; which would, therefore, cost you in reality not a single farthing per pound, for you would thereafter raise even more cotton with the same hands that you now employ on the plantation than you do now. . Why you would do so, would be that your horses and wagons would, to a great extent, be at work on the plantation, instead of laboring on the road to drag the crop to market at perhaps the most unfavorable season of the year; that you would acquire power to make railroads; that you would have mechanics of all kinds coming to settle among you; that the demand for houses would enable you to clear your timber lands with profit to yourselves; that you would have a large demand for food, and better lands on which to raise it; that you would more and more feed that food to stock and men, and would be enabled to return to the land the refuse of its produce, thus economizing that greatest of all the crops, the manures; that your land would be kept in good condition, and the annual addition to the value of the land alone, resulting from increased combination of exertion, would be equal to half the value of the crop you now make, while your crop itself would sell for more than double what you now receive for it.

To enable you to obtain combination of labor, you must place yourselves in a position to have direct trade with the consumers of your products. To obtain direct trade, you must have combination of labor. To give value to your land, you must bring the spindle and the loom to the side of the plough and the harrow. To enrich yourselves, you must place yourselves in a position that will enable you to enrich instead of exhausting your land. Read, I pray you, the following passage from an article in the *Tusculum Democrat*, and see if you cannot find in the fact that you allow yourselves little more than one market in which to sell and one in which to buy an explanation of all the difficulties of which it complains:

“Seriously—for it is getting to be a serious business—such a general scarcity of money has not been known here for years. Why is it so? We think we can tell our farmers the reason why. *They* are the cause of it—*they* are at the bottom of it. *They raise but one article for sale—cotton—and buy every thing else.* Cotton rises in price, as it did last year—they go crazy thereat. Corn, wheat, oats, pork, mules, horses, cattle are rated

small matters—are neglected. An immense crop of cotton is raised—it falls in price. Provisions, supplies, &c., are in great demand, and they rise. The means to purchase with decrease—the necessity of purchasing increases.”

You need diversification of employments, but that you can never have while you shall continue determined to close your eyes to the fact that *real* freedom of trade consists in the exercise of the power to sell in any one of the thousand markets of the world, while *Manchester* free trade looks to limiting you to having but one market in which to sell your cotton and one in which to buy your cloth, and that you would have in the world but one in which to do either, were it not that France, Belgium and Russia reject altogether the teachings of Manchester free trade; while our free traders, under the mask of duties for revenue, conceal the little protection they dole out to the farmer and the planter, because of their perfect knowledge that were they to adopt in full the ideas of their Manchester friends, their system could not stand a single week.

The objects you desire to accomplish, and those which Manchester would desire to see accomplished, are totally different. The latter would extend the culture of cotton. “Is it wise,” says a speaker at a late meeting of the British Society of Arts, “to rely so exclusively as this country now does upon a rival and precarious source for that raw material which to Lancashire and other districts has become of equal importance to food itself, and in either of which a serious scarcity would be equally ruinous?” “At Port Natal,” he continues, “cotton of most excellent quality, and to any reasonable extent, might be grown; and in Australia, cotton equal to the finest of the fine, and almost without limit, might be produced. But last, though not least in importance, in its capabilities of growing cotton, is the great colony of the East Indies, where, beyond doubt, cotton is indigenous, and where for three thousand years it has been grown.”

Great Britain seeks every where to limit the people of the world to the work of agriculture, and her object in so doing is that of stimulating the competition for the sale of the raw products of the earth, that she may buy them at low prices, and for the purchase of manufactured articles, that she may sell them at high ones. She wishes to buy in the cheapest market and sell in the dearest one; and you, who have to sell the commodities that she wishes to buy cheaply, and those to buy which she wishes to sell dearly, go to her for advice how you can sell dearly and buy cheaply! Excuse me for saying it, but there is in this course of proceeding a degree of infatuation that even you yourselves will look back to with wonder before the lapse of many years—because it cannot be many years before there *must* arise a state of things that will compel not only yourselves, but the people of all the tobacco, sugar, coffee and cotton growing countries, to open your eyes to the dangers with which you are menaced.

The interests of the growers of all these commodities are *solidaire* with each other. If your neighbor cannot grow sugar he must grow cotton. If the planter of Cuba be driven from coffee or sugar, he will find himself driven to cotton. If the Brazilian be driven from coffee, he will place his hands where they can grow sugar, and if sugar cease to be profitable, he will grow cotton. As the Virginian or Kentuckian ceases to grow tobacco, he transfers his people to Mississippi or to Texas, there to grow cotton. Every cotton planter is, therefore, interested in the maintenance of the prices of sugar, coffee and tobacco, and every one must inevitably be injured by whatever tends to the reduction of the prices of those commodities. Every Manchester mill-owner is interested in driving people from sugar and coffee to cotton. Your interests and his are always directly the opposite of each other. Having satisfied yourself of this,

I would beg now to remark, that while gold has for the last twenty years become more easy of production, and while the substitution of credit for coin in the transactions of the world has steadily increased, the quantity of gold that can be obtained for a pound of coffee or of sugar has decreased as steadily as has been the case with cotton, whereas it should have increased. Five-and-twenty years since sugar would command on the plantation twice as much gold as it does now, and fifteen years since it would have commanded one half more, and such too has been and is the case with cotton; and yet *the decline has only now commenced*, as you will have reason to see and know with regard to all these commodities before the lapse of many years. The causes of this are, in regard to sugar and coffee, to a considerable extent, the same as those which have forced down the price of cotton. The British system looks to compelling all the people of the world to compete in the production of raw products, and it destroys the manufactures of India, while it forbids the establishment of mills or furnaces in any part of the world; the effect of which is to compel the whole labor power of India and Brazil, Cuba and Jamaica, and all other countries capable of producing sugar, coffee or cotton, to seek employment in the culture of those commodities; and the more they compete with each other, the richer she grows. We are now told of the prosperity of England, and the large consumption of various commodities at present going on is given in evidence of that prosperity. In a number of the London *Economist* now before me, I find the following comparative view of the consumption of March, 1852, and that of March, 1851, the cause of which you will readily understand when you compare the prices as given in the same journal:

	Consumption.		Increase.	Prices.	
	1851.	1852.		1851.	1852.
Coffee, lbs. . . .	1,711,340	2,683,812	972,472	45s. 9d.	39s. 0d. per cwt.
Tea, lbs.	3,975,265	4,358,322	382,957	0s. 11½d.	0s. 8d. per lb.
Sugar, cwts. . .	451,078	544,498	93,420	38s. 0d.	29s. 9d. per cwt.

The larger quantity consumed in 1852 costs the consumer less money than the smaller one consumed in 1851, and the reason why it is consumed is that by the British system the producer is forced to give him this increased quantity *without remuneration of any kind*, precisely as you give away your cotton when you have good crops, and then pray for frosts and storms as the only means of preventing ruin to yourselves and your neighbors. Now, is it not clear to you that every decline in the price of sugar tends to induce the people of Brazil to substitute cotton for sugar, while it tends greatly to diminish their power to purchase cotton cloth; and that every decline in the price of coffee tends to drive labor to the cultivation of sugar or cotton, with diminution in the power to consume either sugar or cotton cloth? To me it seems so certain that such must be the case, that I can scarcely imagine you can doubt it even for a moment.

Now suppose the people of Brazil manufactured their cotton into cloth, instead of exporting it, is it not clear that they would consume more cloth, and that you would have less competition for the sale of cotton, and that both these things would tend to raise the price of your great staple? They are not, however, permitted to produce cloth, because the manufacturers of Manchester hold it to be to their interest to crush all attempts at competition with them for the purchase of the raw material or the sale of the manufactured one, desiring to have the one cheap and the other dear—and they tell the Brazilians as they tell you, that it would be “suicidal” for them to attempt to emancipate themselves from the tyranny of British ships and mills, through which

alone it is to their interest to maintain commerce with the world; and yet no effort is now being spared to substitute the labor of Europe for that of Brazil, Cuba, and our Southern States.

France set the example of raising beet-root sugar, and the result of a few years of protection has been that, without any protection whatever, home-grown sugar is now driving out of the market that of tropical countries, as may be seen from the following statement of facts:

In Belgium the manufacture of sugar from beet-root is rapidly increasing. In 1846 the quantity raised for this purpose was 195,000,000 of pounds, capable of yielding 15,000,000 pounds of sugar. Since that period the cultivation has *enormously* increased, and owing to great improvements, the manufacture is carried on with greater advantage than ever before.

In Germany, the quantity of beet-root sugar made in 1844-5 was but 16,000 tons, or 32,000 hhds. In 1850-51 it had reached 60,000 tons, or 120,000 hhds., being almost one half of the ordinary crop of Louisiana, and with a prospect of even more rapid increase. In Ireland, the cultivation of the beet for sugar is now begun, and it is likely to make rapid progress, for that country is stated to be remarkably favorable to its growth, the yield being stated, on high authority, to be twenty tons to the acre, whereas that of France is but twelve tons. I have now before me a very elaborate examination of the question of the advantages to be derived by Ireland from the naturalization of the sugar culture, and the result is such as must, I think, satisfy any one that the day is not far distant when your fellow-planters will find in Europe such a competition for its own market as must reduce the price very far below what it is at present, and this notwithstanding the fact that gold is becoming cheaper from day to day.*

Let me ask you now to look at the various ways in which British policy tends to the destruction of your interests. It destroyed the manufactures of Ireland, but in return therefor it gave to the people of that country certain advantages for the sale of their produce in the British market. Next, by the repeal of the Corn Laws, it destroyed the agriculture of Ireland, and that country is now a large importer of food for man, whilst it has little to sell except of that consumed by animals. By this process the market for your

* Since writing the above, I have met with the following accounts of what has been and is being done in Ireland, and is now about being done elsewhere:

"The operations of the Irish Beet root Sugar Company, which commenced at Mountmellick about a fortnight back, are described by the parties interested to have been very favorable. The average crop of beet-root in Ireland is said to be 26 tons per acre, while on the Continent it is only 16 tons; and it is now affirmed that the *minimum* yield of saccharine matter is $7\frac{1}{2}$ per cent. in raw sugar, whereas on the Continent 7 per cent. is the highest. A further advantage is also said to exist in the cost of the process as carried on at Mountmellick, where it averages £7 5s. per ton, against £9 per ton abroad. On the other hand, the price of the roots in Ireland this year has been 15s. per ton, the Continental price being 12s. 6d. Offers for next year, however, have been made at 13s. On the whole, at present rates, the Irish sugar is alleged to be produced at £17 per ton, the Continental average being £17 15s. The manufactory now at work cost about £10,000. It employs 160 laborers, has two steam engines, together of 40 horse power, and works up about 300 tons of beet-root per week. The Company propose to erect six more establishments during the year. Refined sugar has not yet been made, but its manufacture will commence in a week or two."

"A company has recently made arrangements for manufacturing the article in California; the capital is \$250,000. The soil and climate of that State are said to be very well adapted to its cultivation. The plantation sugar will find this a strong competitor. The first sample of the Irish beet-root sugar was sold in London recently at 33d. per cwt., a price far below that of colonial sugar, and yet the beet-root sugar will realize a profit to the manufacturers."

cotton has been largely diminished, as the poor people of Ireland are unable to consume even one pound per head, when, if they had the loom and the spindle, the hammer and the anvil, by the side of the plough and the harrow, they would need twenty pounds. Competition for the purchase of cotton being thus destroyed, the next step is to be that of increasing competition for the production of cotton, and that will be accomplished by the substitution of the sugar of Ireland for that of Cuba, the effect of which will be that of so lowering the price of sugar that Cuba, Louisiana, and Brazil will be forced into the culture of cotton.

Again, chicory is now being cultivated on a large scale, as a substitute for coffee, and its production is *protected* by a heavy duty on the latter. It has become "an important feature in English agriculture," and cannot fail to become much more so when we see that an acre of it yields two and one-fourth tons of dry root, worth £27, while the cost of rent, labor, seed, &c., is but £7 per acre, leaving a clear profit of £20, or \$96, per acre. The effect of this is seen in the fact that the consumption of coffee, which in 1845 was—pounds, - - - - - 34,000,000, and rose in 1846, '47 and '48 to - - - - - 37,000,000, had declined in 1850 to 31,000,000, and in 1851 to - - - 32,000,000.

You will now readily see that while no effort is being spared to supersede your cotton by the extension of its culture, and by the substitution of flax, the same process is now going on in respect to both sugar and coffee, the effect of which must inevitably be that of producing competition in the production of cotton; and yet the system you maintain tends to deprive you of all power of resistance. You are placing all the machinery for the finishing of your crop among the people who seek to substitute flax for cotton, and home-grown sugar and coffee for the products of your neighbors. Is this wise? Must it not end in ruin?

The system tends to ruin the sugar planter of Jamaica and of Brazil, and to prevent him from obtaining the machinery required for enabling him to extract the sugar from the cane, and thus gives to his European rival an advantage which must result in the destruction of the sugar culture now carried on by means of black laborers, thus described, as it exists among your immediate neighbors, in a recent journal:

"The humiliating exhibition, every where seen, of the most important operations on sugar estates being left to ignorant negroes, operating by guess, is self-condemnatory, and will, we are sure, be regarded by every sensible person as a stronger argument for the establishment of agricultural institutions of the kind we have feebly adumbrated, than any we could possibly adduce. On many plantations the negro is engineer, sugar-maker, every thing; judging of the syrup by spoon, lining at hap-hazard, and running his engine half by instinct, partly from instructions from some half-made engineer, and a portion by accident. In this way is no inconsiderable portion of the sugar crop of Louisiana annually taken off. It is time these practices underwent a change; it is time that the planting interest of the State would bestir itself, and make efforts worthy of it for a prolonged and vigorous existence; for any one who attends to the subject must perceive that unless something be speedily done, sugar planting for profit will be not much longer attempted in Louisiana. The culture of the beet is every where extending on the continent of Europe, and in Ireland the experiments this year made gave very satisfactory results as to the manufacture of sugar from it; which will, no doubt, be followed up extensively in that country and England. This, and the continued increased production in the East India Archipelago, will cause a greatly increased quantity of Cuba sugars to be thrown into our markets; to meet which augmented competition, we believe all persons practically conversant with the subject will admit we are not in the best possible condition. If, therefore, there ever was a critical moment in the affairs of the sugar interest, the present is the one; but whether the planters of the State can be brought to

believe it, and to take the requisite steps for their preservation, we cannot undertake to say. Of the fact, however, we have not a shadow of doubt."—*New-Orleans Crescent*.

It is easy to admonish, but it is difficult to obey the admonition, when every step taken by the planter tends to throw power into the hands of those whose existence depends upon increasing competition for the sale of the products of the farm and the plantation, and diminishing competition for their purchase. Ireland purchases little sugar, coffee, or cotton, because she has no diversification of labor, and never can have while she is subjected to *Manchester* free trade. Portugal, Spain, Italy, Turkey, consume little sugar, coffee, or cotton. Canada imported in 1850 but 7,000 tons of sugar, and but 500 tons of coffee, while her consumption of cotton did not exceed four pounds per head. If Manchester free trade is good, why is it that where it prevails the consumption of Southern products is so small? Give Canada the protection needed to enable her farmers to bring the loom and the hammer to their side, and they will need thrice the quantity of coffee, sugar, and cotton. The large consumers of these commodities are found in the protected States of the world, France, Belgium, Germany, and Russia; and yet Manchester would teach you that your interests are to be promoted by the general adoption of the system that it has baptized by the name of "free trade," and which diminishes every where the consumption of the fruits of negro labor.

The people of Cuba are awaking to the fact that they cannot compete with those of Europe under the existing system, and they are now endeavoring to protect themselves by the importation of Chinese laborers, the gain from which is stated already to have been almost incredible. "His inveterate assiduity," says a journalist of the day, "saves ten per cent. from what has hitherto passed for necessary waste. And if," he continues, "with the rivalry of negro labor upon the island, the Louisiana planter has contended at disadvantage, how shall he sustain himself against the ship-loads of orientals imported, or about to be, by the enterprising Spaniard?"

"To skill the Chinaman adds assiduity. He is an indefatigable worker. Weariness, that foe of industry, may pursue, but it never overtakes him. He will condense the reluctant toil of a slave for two days into one. He does not require the stimulating lash of the overseer. His work is as industriously as it is intelligently executed. For the reckless, indolent *abandon* and passion for amusement, characteristic of the African, he substitutes the Asiatic gravity and consistency of purpose. His only passion is avarice, and it begets an unresting devotion to labor.

"And besides incalculable economy in the articles of skill and economy, the Chinaman comes commended by superior direct cheapness. He contracts in California and Cuba for a term of years, at prices varying from forty-five to fifty dollars. He is entirely satisfied with such wages. At home he cannot earn half the sum. China is a vast, over-populous hive, without employment for a moiety of the inhabitants. The bounds of the empire, it will be borne in mind, inclose *one third of the human family*. Huddled together in a compass so comparatively inadequate, and so utterly the slaves of despotic custom as to be incapable of enterprise or social improvement at home, the people gladly seize opportunities to escape, and establish themselves where there is elbow-room, and enterprise to employ their individual intelligence and energy."

It is, I think, scarcely possible to look to any portion of the slave countries of this hemisphere without seeing that they are all menaced by dangers such

as they have never before experienced, and such as must result in ruin, unless they can take warning from the past, and extricate themselves from the yoke of men whose every feeling and every interest is opposed to their advance in prosperity or in power. The Englishman sees with indifference the gradual destruction or extirpation of the people of Ireland, yet he congratulates himself that he lives in a land of freedom, and discourses most eloquently upon "that dark spot upon the cultivation of American cotton, which the friend of progress and humanity would desire to see obliterated," and he assures his hearers that there can be no safety for Manchester while there is "coercion of labor." He holds that the road to freedom for the slave consists in the destruction of the value of the labor and land of the South, and that in substituting Irish sugar for that of Cuba and Brazil, and flax-cotton for that of Georgia, he is rendering good service to both God and man; and yet *when you desire to find how to raise the value of your land and your labor, you go to Manchester for advice!* The advice is taken, and its effect is not only to stop the progress of competition for the purchase of your cotton, but to diminish largely that which had arisen, and then you send to the English market as many bales out of a crop of 2,350,000 as before you had sent out of a crop of 2,700,000, the consequence of which is a fall of price from fifty to thirty dollars a bale, and a loss to the planting interest of sixty millions of dollars; in return for which Manchester feasts Mr. Walker, and compliments him as the great advocate of the system which sees freedom of trade in the limitation of the planter to a single market in which to sell all his cotton, and a single one in which to buy all his cloth and his iron.

While Southern policy tends to produce throughout Europe competition with Southern products, and consequent decline of price, it tends here to produce the same result. The tobacco culture is gradually passing from the Southern States to the Northern ones, and the destruction of the domestic market for grain, consequent upon the working of the tariff of 1846, cannot fail to give a great impetus to that movement. The lead mines of the West and the mills and furnaces of the East are gradually being closed, while the whole European market for food absorbs less than it did seven years since; and the consequence is, that wheat is gradually ceasing to pay the farmer, who is now being forced to look for other employment for his labor and his land, and tobacco pays him well. The Marylander grows less tobacco, and the Kentuckian diminishes his cultivation of tobacco and hemp, and the people who were before competitors for the purchase of cotton next become competitors for the sale of it, and every increase in the number of producers, or decrease in the number of consumers, tends towards the reduction of prices.

It is impossible to study Southern policy without a feeling of surprise that men so generally intelligent as are you planters should be able to close their eyes to the fact that it looks to riveting still more closely on their necks the chains of men whose every interest is adverse to theirs, and to separating them from their fellow-citizens of the North, whose every interest is in harmony with their own. Manchester rejoices at low prices for cotton. We rejoice at high ones. Manchester prays for high prices for cloth and iron, and that both may be high, she desires that there may be but one producer of either. We pray for low ones, and that they may be low, we desire that there may be competition for their production. Manchester desires that food may be low. Our farmers prosper when it is high, and that it may be so, we desire to make a market for it among the producers of cloth, iron, coal and lead. Manchester has no object that is in harmony with Southern interests, and we of the North have none that is not so, and yet you of the South cling to your

enemies, and enforce upon the whole Union a system that is even more destructive of your own interests than it is of those of your fellow-citizens north of Mason and Dixon's line; and hence the discord that has so recently threatened the integrity of the Union, and that must inevitably continue to agitate it, with danger to all Southern interests, so long as you shall continue in the belief that freedom consists in having but one market in which to sell and one in which to buy. The freeman may go to many markets to sell his labor or its products, whereas the slave can go to only one, and in this consists the sole difference between the two. The free nation may have its choice of many markets, home or foreign, whereas the enslaved one can have—as is the case with Ireland and India—but one. Freedom is every where attended with prosperity, and that such is the fact is felt by every man at the North. The South denies them that freedom. It would subject them to a system that has ruined every nation that has been forced to submit to it, and then its people are surprised at the growth of anti-slavery feeling. If they would put an end to agitation, let them adopt the measures that will bring the cotton mill to their own cotton fields, and agitation will soon be at an end.

Since writing the above, I have met with the following from the *Little Rock Gazette*, of Arkansas, in which are the same complaints that we elsewhere see of the want of a diversification of labor that never can be obtained while you shall continue to support Great Britain in her efforts to compel you to make all your exchanges in her single market:

"We must not forget that a proper regard to manufacturing interests, and a due attention to the various improved systems of agriculture, go hand in hand with the work of internal improvement. Every effort, therefore, that may be employed to perfect our knowledge of these arts, and render increased returns to investments more certain and practicable, tends to promote general progress, and add to our prosperity. We hazard the assertion that there is something radically defective in the system of agriculture as practised in our State. Why is it that our farmers, for years past, have been dependent upon the supplies of provisions which are produced in such surplus quantities in more favored States? Has Heaven failed to visit us with genial showers, and withdrawn the fructifying rays of the summer's sun? Not so. True, we have for three or four years labored under some disadvantages in respect to the *seasons*, but never has the want of these blessings been such as to justify us in expending *all* of our means in the importation of such articles of necessity as should have been raised in abundant profusion at home. Thus we present to the world a memorable instance of ignorance or improvidence. The agricultural interest is the only one of the great branches of productive industry that engages our attention, and yet we import for daily consumption nearly all our flour, large quantities of bacon, now and then our corn, and a host of other edibles, to the production of which our soil and climate are as well adapted as any other within the compass of the Union. Now, what advantage does the culture of our great staple, to an extent so great, afford us, if we are compelled to expend the entire avails which it brings to us in a foreign market for the necessities of life, the articles of every-day consumption? There is a screw loose somewhere. *We must, if we expect to become a prosperous people, direct our attention more than we do to the production of such articles as are necessary to our support.*"

Not only cannot you yourselves raise the pork and other commodities required on the plantation, but the effect of the system of 1846 is now becoming obvious in the *diminished production* of those commodities in the United States, and the *large increase in the price you have to pay for them*. From 1842 to 1847 the quantity of the "product of animals" passing on the New-York canals nearly doubled, but since that time it has fallen, and is now so rapidly falling, that there is reason to suppose that it will not this year amount to more than the quantity of 1843, notwithstanding the vast increase of population. You are now selling in the cheapest and buying in the dearest market, and the result is shown in the complaints that so much abound in

your papers, and that must continue to abound until you shall come to the conclusion that protection to the farmer and the planter in their efforts to bring the spindle and the loom to the side of the plough and the harrow is the speedy, the profitable, and indeed the only road to that freedom of trade which consists in the exercise of the right to go to any one of the many markets of the world, instead of being compelled, in the name of Manchester free trade, to make all your exchanges in the single market of England.

I pray you to reflect on these things. The interests of the South are in danger from all quarters, and look in what direction you may, you will see that the danger is produced by that British policy which looks to the interposition of British ships, British ports and warehouses, merchants and manufacturers, spindles and looms, between the consumers of Southern products and the producers. Nevertheless, the South clings to Britain, whose every feeling is hostile to Southern interests, and whose every movement tends to the destruction of the value of Southern land and labor; to the impoverishment of the land-owner, and the deterioration of the condition of the slave. It is surely time that your fellow-planters should begin to examine for themselves, and cease to permit themselves to be led away by mere words. Sydney Smith complained of the "tyranny of mere words," and assuredly there never was a case of it more remarkable than that we are now examining. England proclaims free trade as a means of obtaining much agricultural labor in exchange for little manufacturing labor. *This is precisely what you desire that she may not accomplish*; and yet, when her Chancellor of the Exchequer proclaims her success, and assures his hearers that they are now enabled to obtain *larger* supplies of cotton and sugar, coffee and rice, in exchange for *smaller* quantities of British labor, you unite with him in lauding British free trade!

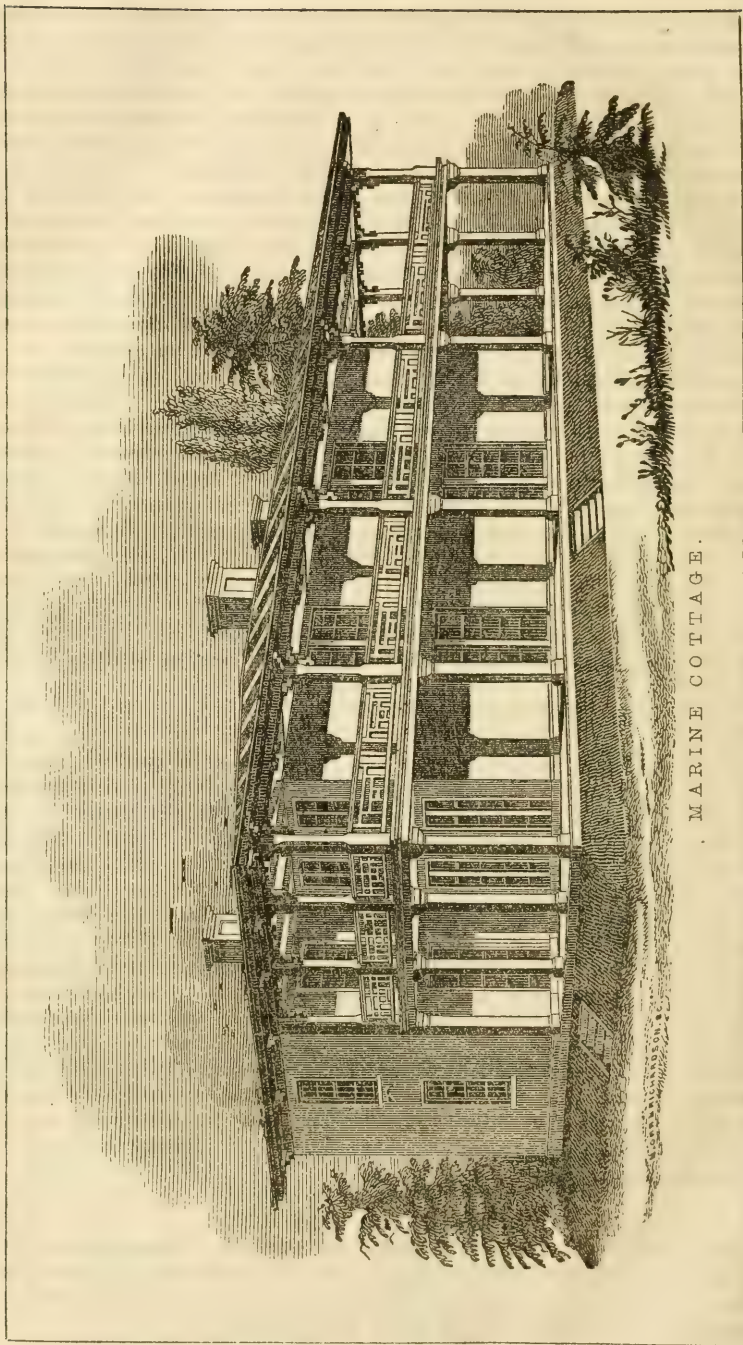
The day of trial for Southern men and Southern institutions is at hand. Not a day passes by that does not bring with it evidence that it is nearer at hand. What is to be the result, should Southern men continue determined to maintain and even to increase their dependence on people whose feelings and interests are hostile to their own, may, as I think, readily be predicted. It will be ruin. If they would avoid this, their only course is that of making themselves independent, by bringing the spindle and the loom to the cotton fields, and enabling themselves to obtain direct trade with the world. The more independent they are of the North and of England, the larger will be their power to trade with both, and the stronger will be the tendency to harmony in relation to all. The jealousy now existing is evidence of weakness. Make yourselves strong, and all jealousy will pass away. Before you can do this, however, you must awake to the fact, that it is the planter of the South and not the manufacturer of Lowell that needs protection.

In the hope that you will see that the future of the South is dependent upon a correct decision of this question, and that you may be induced to give to it the full consideration which it merits, I remain, dear sir, with great regard and respect, yours, very truly,

HENRY C. CAREY.

Burlington, May 24th.

THE PIE PLANT.—A correspondent of the *Indiana Farmer* expresses the opinion, based upon experiment, that the use of ashes for the pie plant produces a more delicious plant than any mode of culture—not being sour, but just containing enough acidity to make them pleasant.



MARINE COTTAGE.

COTTAGE DESIGNS.—No. VI.

THE annexed engraving is a view of a marine cottage, or, as it is termed, villa, recently erected at Long Branch, Monmouth county, New-Jersey, as a summer residence for Philip A. Stockton, Esq., of this city. It is delightfully situated about five hundred feet from the sea-side, on a slight eminence, and commands an uninterrupted view of the ocean.

This cottage is designed expressly for a summer residence, and is adapted to its situation, having a flat roof, bracketed, and completely surrounded with double galleries. The house, in the centre, is well sheltered from the sun, and during the sultry summer months, as a sea-side residence, it affords both comfort and recreation.

Gentlemen who have abundant means (and there are a sufficient number of such to stud the shores of Rockaway and Long Branch with marine villas) would find it more economical in the end to erect houses for their families by the sea-side, instead of crowding into hotels already over-peopled with a host of chance visitors ; and more particularly as a marine cottage, being intended for occupancy only during the summer months, need not be so expensively constructed as a country house for a permanent residence.

The term *villa* is, we think, too often misapplied in this country, and our architects seem in many instances too fond of giving a title to their plans and buildings, which is not really indicated by the buildings themselves. In England, we believe the only instance of the application of this term to a sea-side residence is that of the oriental palace of George IV., at Brighton. Certainly we have no residences in this country that deserve to be called villas, if we use the term with a recollection of those of Lucullus and Cicero, or of the modern Italians even ; and the term cottage, or rural residence, would give a far better idea of the character of the structure which it is designed to describe.

The habit to which we allude is one that we would gladly see corrected, as it justly subjects us to frequent ridicule from travellers and others who visit us from foreign countries.

NATIONAL AGRICULTURAL SOCIETY.

In another page, the reader will notice a call signed by various Presidents of Agricultural Associations, for a meeting to be held at Washington, during the present month, for the purpose of considering the expediency of forming a National Society. Delegates are to be chosen from the smaller organizations, who will meet and consult, and do what can be done for the promotion of the agricultural interest.

We regard this meeting as important. Its tendency is to awaken farmers and planters to a consciousness of the fact that they are not pursuing the means necessary to secure their own individual interests, nor the interests of the class.

Improvement is the watchword of the day, and relates both to the means and to results ; and that class of artisans, laborers, or producers, under whatever name they may be known, which does not avail itself of the benefit of intelligent experiment and scientific methods, will inevitably fall into the rear of this advancing throng. We care not what may be their present position. The question will not be, how *have they been* regarded for comparative intelligence, and mental culture, and successful practice, in reference to their pro-

professional pursuits, but WHAT ARE THEY? Look at the mechanic arts. He who should continue the modes and styles of the past generation, condemning the improvements which have been made in the implements employed, would actually starve. In agriculture, the contrast between the past and the present is not so great, but it is constantly increasing, and that in a twofold form. The old ways are becoming less and less productive, as the soil loses, year by year, its power to produce, and science and skill are constantly becoming more and more effective in practice, as true and false science are the better distinguished. We hope the call will meet with a ready response, and the meeting be productive of great good.

PECULIARITIES OF ENGLISH AGRICULTURE.

RENT OF LAND, TITHE, CHURCH RATES, LAND-TAX, POOR-RATES, WAGES, ETC.

To the Editors of the Plough, the Loom, and the Anvil:

THE rental of lands in England of course varies according to the situation, quality, and other considerations which may affect the products of the soil. Ten shillings sterling per acre, up to thirty or more, are often paid for good rich soils. In some instances, the rent is paid according to the price of the produce, ruled by a sort of sliding scale, regulated by the rise and fall of the market. In a few instances, it is paid by a share of the crop, but this is rarely the case.

Farms are generally hired upon a lease varying from seven to twenty-one years; and long leases are generally preferred, as they give the tenant opportunity to avail himself of the improvements he makes during the first part of his agreement.

Lands which rent high find tenants more readily, being considered the most productive; as a poor farm, although at a nominal rent, requires more expense for labor and manure, and after all makes but a poor return. In the rent of a farm in England, as that of a store in a city, the *amount* is of no consideration, but depends upon the location for business and its productiveness. "What is the rent?" is generally the last question an English farmer asks the proprietor.

The tithe, or a tenth part of the produce, devoted by law to the national ecclesiastical hierarchy, instituted under the Saxon dynasty, appears to us a heavy tax upon the soil, and doubtless the proceeds of this system might be expended in a way far more beneficial to the country than it is at present.

It is well known by every Englishman that one tenth of the produce of the whole soil is the property of the Church, and cannot be sold, willed away, or diverted from its ancient tenure, except by legislative enactment. If a man sells his farm, he sells but nine tenths of its value; he did not buy more when he purchased it, and if he came to it by heirship, he received only nine tenths of it. Therefore, he is neither robbed nor defrauded of any part of his rights.

Some lands are tithe-free by act of Parliament. They may have been exonerated as a boon to the owners for some service done the state. When this is the case, and such lands are sold or leased, they invariably bring a higher price, as the purchaser knows that he becomes entitled to the whole of the produce. Here, then, we plainly perceive that the tax of tithe does not now affect the agriculturist so much as a casual observer would suppose.

Tithes in England are divided into great and small. The great tithes con-

sist of grain, hay, and the heavier crops, while the small tithe includes roots, garden stuff, hops, and the smaller produce. The great tithes are claimed by the higher grade of the clergy, while the small belong to the lower class of that order. In some cases both are united, and belong to the same claimant. A considerable portion of the tithes is also paid for the support of various religious endowments.

The mode of collecting the tithe is sometimes vexatious and expensive. When the clergyman and the parishioners are upon amicable terms, there is no difficulty, as the farmer finds it to be to his interest to compound with the clergyman by paying him a certain amount annually, and then taking to himself the whole of the produce.

If the clergyman is a litigious, covetous man, and wishes to exact to the very utmost, the farmer may compel him to take his tithe in kind, which makes it expensive, as he must pay for collecting it, while the uncertainty of the weather, as also the scarcity of hands in a busy time, make it very difficult for the owner of the tithe to secure his part of the produce. The farmer does not house the tithe. Every tenth cock of hay, and every tenth sheaf of grain, is left out in the field, of which due notice must be given to the tithe owner by the farmer, when he carries his own to the homestead.

The annual tithe dinner so minutely described by Cowper, in his comic vein, commencing, "Come, ponder well, for 'tis no jest," is a real and vivid description of that yearly meeting of the parishioners with the clergyman. This scene seems to be a sort of shadowy remnant of the feudal system. A good dinner is provided, with no lack of wine. This, for the time, keeps the farmers in good humor, and they pay their dues with smiles; but afterwards, when the feasting is over, and the hilarity occasioned by the wine and the company have passed away, many of them, perhaps, like Job's children of old, curse the tithe system in their hearts.

The parish where the writer resided paid four hundred pounds sterling to the vicar, which was considered to be the value of the small tithe. The great tithe was worth about or something more than four times as much. This latter was not in the possession of the church, but had been sold upon lease. The purchaser was, however, obliged to do certain repairs to the parish church, while he was the receiver of the tithe property.

The original design of tithes was to support the aged and the sick, as also to provide for the instruction of the people; and if it could revert to that, its original design, and the proceeds be expended on an economical and wise plan, money could not perhaps be devoted to a better object, nor could society be elevated and blessed by a more efficient method.

Another tax upon land may be mentioned, which, although but trifling, is very unpalatable to the Dissenters, or, as they are often called, Non-conformists. Perhaps one half of the population of England is of this description, from birth, habit, or conscience, and never attend worship at the national religious establishment. The church-rates upon this part of the community are a galling, tyrannical tax, and they justly try every means to evade it. As the law now stands, they are often able to rid themselves of it. This tax is raised for the purpose of keeping clean and repairing the church, paying the sexton and church-wardens, washing the parson's surplice, and other incidental expenses.

When a tax for this purpose is needed, a parish meeting is convened, and the amount of money wanted is specified. If the majority of the parishioners are of the Established Church, they can of course carry any question, and raise what amount they deem necessary. But if they are not a majority, the

Dissenters, by out-voting them, can and do, in many instances, frustrate all their designs. They then have recourse to a voluntary subscription among themselves, and frequently the Dissenters assist them through courtesy, and to promote good feeling.

The Quakers resist this church tax to the very letter. When the collector applies for it, he is allowed to set a value upon any article in the house, or on the premises, as much as will cover the amount of his claim, and then the owner redeems it, thus paying to recover what the law had taken, rather than to give money for the support of any religious system which he thinks contrary to the law of God.

The land tax, properly so called, is another assessment upon the soil of England; but this is but trifling, compared with the tithes and the poor-rates. This is a tax universally paid both by farmers and householders. It is supposed to be the original tax, anterior to all others, and, most likely, enforced by the ancient barons in lieu of the personal service which their tenantry were accustomed to render them. This is never made a subject of complaint, as it falls most heavily upon the aristocratic part of the community, who are the possessors of large domains. In some cases, this tax has been redeemed by compromise with the government.

We come now to the worst and heaviest of all the taxes upon English agriculture, viz., the poor-rates, or the tax to support the poor who are either old, infirm, sick, or for whom work cannot be obtained.

The subject of pauperism in England is one of immense importance. Statesmen have studied it with trembling nerves, and its great increase has alarmed the best and wisest ministers of the government.

But the poverty that is found in England is not the effect of the law, nor altogether of misgovernment, although we are willing to acknowledge that there are defects in British legislation, as there ever will be in all human institutions.

If all the people of this vast republic were crowded into the State of New-York, and confined within its limits, instead of occupying their present widely extended territory, we should then have an idea of the actual density of the population of the mother country.

The English law provides a home for every man, on whatever part of the coast he may set his foot. The parish in which he lands is bound to convey him to the place of his birth or settlement, and to support him until he arrives there. Every township is required to appoint guardians, to whom the poor may apply for redress, when refused support by the overseer, who must either find the applicant work, or some other means for his support.

Some parishes are much more encumbered with a surplus of hands than others, and when this is the case, it increases the tax, inasmuch as every township is compelled by law either to find work or support for all who make a part of its population.

To prevent some parishes from being overrun with useless hands, many townships are united, and the rates equalized. Union poor-houses have been erected, and the hands in them hired out to work, and their earnings fall into the general fund to aid in the support of the whole establishment. The inmates thus boarded and lodged are allowed to leave when they choose, or if they think they can benefit their situation.

Owing to the greater number of hands than was needed in the agricultural district where the writer formerly resided, the poor-rates were very heavy, amounting to nearly as much as the rental of the land; perhaps, in some instances, they were even higher. These rates were generally higher in

winter than in summer. Many parishes would parcel out their surplus hands among the community, and pay their wages from the poor-rate fund, making that rate high enough to meet the demand, and thus give every rate-payer an equal share of the labor performed by these extra hands. In many places, public stone and gravel pits are opened, to find employment that shall make some return, while numerous workmen were employed upon the turn-pike and other roads, rather than that they should be supported in idleness.

The out-door payments to widows, the aged, and the infirm among the poor, used to be enormous, as it was impossible to accommodate them all in the poor-house. They received their allowances (many of them weekly) at their own residences, by some trusty kind neighbor, or a relative that dwelt under the same roof. It is in this, as in all human institutions, the well-deserving suffer through the fraud and wickedness of others, and it is a most difficult task for the overseers and guardians to discriminate between the really needy and those who merely *pretend* to be.

Every well-informed mind must have observed that, since the peace in 1816, no country, England excepted, with her dense population and limited territory, could have stood the crisis as she did, and continue to hold that elevated station she now occupies among the nations of the earth. While nearly every capital in Europe has, during the last forty years, been visited by a foreign foe, and their streets flooded with human gore, London has remained quiet and prosperous. When Napoleon styled the mother country a nation of shopkeepers, he spoke truth; but the patriotism of the people, the strength of the government, and the loyalty of the country, all united to close their shop-doors against his entrance.

Nor has any country, during the same space of time, done more, if so much, to benefit and promote the interests of agriculture. Immense tracts of land have been and are now being reclaimed from barrenness, and made productive. Bogs are drained and wastes retrieved from a useless condition, to become a source of profitable culture, and the produce of the island is increasing both in value and quantity every year.

The subject of wages we have mentioned in a former paper, averaging eight or nine shillings sterling per week, but during the harvest weeks wages are always doubled. A farmer in England always pays his ploughman one shilling sterling per week more than his other hands. He has the sole care of the team, and is always expected to pay them the greatest care and attention. The hours for ploughing are from six to ten, and from eleven to three. A ploughman is expected to do nothing else but attend to his team, and he glories in seeing them look sleek and fat.

The poor man's cottage in England seems to be a sort of sanctum found no where else. Its white walls, the brown thatch upon the roof, the rural fence, and the home-made gate, are all in good keeping with the house. The garden is his pride, the place where he likes to busy himself in the summer's evenings, and this he can do there until nine and ten o'clock, by reason of the long twilights in that country. The most striking thing to a traveller from abroad is the apparent neatness and comfort he sees, and the beautiful display of flowers in and around the house. Should curiosity or weariness induce you to enter, the long bright case of an eight-day clock is often the first thing that strikes the eye, and the large arm-chair which stands by the hearth. Every thing around is clean and bright, as you tread upon the white brick floor sprinkled with yellow sand.

In no class of the community in England is there a greater degree of contentment than among the working hands when they are fully employed; and

although the public school system of education is not there carried out as it is with us, yet there are numerous endowed places of instruction of which many avail themselves. There is also a large class among the wealthy, who devote themselves to provide means by which the poor and ignorant may become instructed.

The Sabbath-school institution, which is universally adopted by all religious sects throughout the country, is an immense blessing to Britain's poor. The teachers are of the higher classes, and by thus coming in contact with the inferior grades of society, the latter become morally improved. Pure and elevated sentiments are taught them, and as they perceive that their superiors feel an interest in their welfare, the different grades of society are bound together, and thus the entire fabric of the whole community is strengthened.

AGRICOLA.

Madison, N. J., March 24, 1852.

LOGIC OF BRITISH FREE TRADERS.

"It is a great mistake to overlook the fact that demand is the basis of production. It is because a man wants certain things that he produces the article to which circumstances best adapt his powers, to exchange it for the things he wants. Having produced this article by the exercise of his own faculties, he becomes dependent upon others to exchange it, and steamboats, railroads, canals and shipping, with commercial capital, come to his aid. The more promptly, readily and cheaply the exchange is made, the greater quantity of the things he desires he can obtain for that which he has produced. That is to say, the smaller the proportion which commercial capital and government draw from the products, the greater proportion will he enjoy. Hence every obstacle removed from the facility of exchange is an addition to the comfort of the producer. The present condition of the United States and England is an agreeable illustration of this great principle."

We take the above from a free-trade journal whose editor believes that the people of Illinois exchange their corn for lead "more promptly, cheaply and readily," by sending it to New-York and thence to England, than they could do if they protected themselves in their efforts to bring the lead miners of England or of Spain to take their places by the side of the vast deposits of mineral with which their State abounds. He believes that the people of Ohio obtain their iron more "promptly, cheaply and readily," by cultivating an acre of land to obtain from it ten or twelve bushels of wheat, that, before it can be converted, must pass to New-York, and thence to Great Britain, there to pass through the great laboratory, the stomach of man, and to be combined with fuel and ore to come out in the form of iron, than he could do if he would protect himself in his efforts to bring the miners of England to dig his ore, and the furnacemen to smelt it for him, while taking their pay in potatoes, turnips and cabbages, mutton, veal, butter and cheese, of which he can have tons from his rich lands while he obtains only hundred weights from his poorer ones. He believes that the land-owner is enriched by sending all his produce from the land, losing all the manure, and then abandoning the land to itself. He believes that the way to enrich the cotton planter is to have the spindle and the loom at a distance from his cotton fields, that he may send away four bales of cotton to obtain in return one bale of cloth, when the conversion of a pound of cotton into cloth requires less labor than is needed to produce the cotton itself. Believing all these things, we need not wonder that we should find him asserting that demand is the basis of production; that the poorer the people and the greater their need, the more they will produce. According to his system, the production of Ireland and India, Portugal and Turkey should be large, for the demand even for food in all those countries is far beyond the

supply, and their people go in rags or even naked, because the demand for clothing is so vastly beyond the supply. English free trade is based upon an increase of the *necessities* of man, and such is the doctrine of the British free traders. American free trade is based upon an increase of the *power* of man, and such is our doctrine. Production is the basis of demand. It grew under the tariff of 1842, and demand was great; and therefore it was that the consumption of iron trebled and that of cotton and wool doubled under it. It declines under that of 1846, and therefore it is that demand declines; the consumption of both cloth and iron having fallen off twenty per cent., notwithstanding an addition of fifteen per cent. to the population. Reënact the tariff of 1842, and the demand for cloth and iron will again double itself in five years. Retain that of 1846, and the demand for both will be less five years hence than now, for then we shall have not even the power to sell our bonds. That *power* results from the beneficial action of the brief period of the tariff of 1842. The *necessity* of paying interest and for dispensing with both cloth and iron will be a result of that of 1846.

TILLING MUCH GROUND WITHOUT MUCH PROFIT.

To the Editors of the Plough, the Loom, and the Anvil:

If an American travels through Wales or England, and observes the manner in which the people of those countries cultivate their soil, and the vast amount of produce which they get from a comparatively small parcel of ground, he must be at once convinced that, as a general thing, the American farmer ploughs too much ground for his own advantage. A small farm, well cultivated, is fourfold more profitable than a large one tilled in the "skinning manner," that is, ploughing four inches deep, taking off every thing the soil will produce, and returning nothing in exchange for that of which you have robbed the land. Now, I know many so-called farmers who have adopted the "skinning manner" of farming for a series of years; and I would ask, What has been the result of their mode of agriculture? The question is easily answered. We can sum up the result in a few words, thus: Their soil becomes impoverished; it refuses to yield to the farmer, who so abuses it, the amount of produce necessary to make it profitable. Those substances which give life and fertility to soil have been drawn from it, and it is not in a fit condition to plough, sow, or any thing else. The disappointed farmer complains much and often, because he has not derived more benefit from his land. Now, every one must, or should know, that the soil is not in fault in such instances, for not affording the necessities of life in abundance. The man who has exhausted it of the constituents of fertility is the one who should receive the blame, for he has taken from it those substances which go to make crops. He has tilled too much ground, and has not returned to it sufficient fertilizing matter to render it suitable for cropping purposes.

We do not use grass and clover seeds enough; we should be more liberal in the use of these seeds, and take as much pains in sowing them as we would in sowing wheat or barley. It is entirely wrong to sow a twenty-acre field five times in succession with oats or barley, and not feed that field either with grass-seed or manure. It would be much better for the farmer, and much more profitable to the soil, to cut such a field into three parcels. One third of it might be made to produce more than the whole field under the ordinary management of it. With good management, six acres and two

thirds will yield a profit that will pay the farmer thirty per cent. on the amount of labor laid out. This may seem to be bordering on the extravagant, but the trial has been frequently and successfully made, and within the knowledge of the writer. Last spring we (I say "we," for we live on and work our farm collectively) ploughed a field for corn, containing eight acres, and ploughed deep, (about ten or eleven inches, and this is what I pronounce deep ploughing in a limestone soil,) then rolled down, harrowed, "marked out" with our horses, and planted the ten-rowed white corn, three feet and a half apart each way. Our soil was in fine condition before ploughing, and we manured it, which of course made it more fertile; took care of our corn well, and got sixty-five bushels to the acre. The corn sold at 53 cents per bushel; or in other words, the corn raised from an acre brought \$34.45. But here are the stalks. What is an acre of these worth? If they are well secured, an acre will produce enough to keep a cow, with very little hay added, through the winter, and she will come out bright and good. Then, according to this, an acre of stalks is worth between seven and eight dollars, which amount will pay for raising an acre of corn up to husking time; that is, it will bring it into the condition of stooks. The cobs are worth something, and particularly when applied to fruit trees, and the stalks, or the manure produced from them, will do again to help enrich the soil for another crop. We will take out of each acre, or out of the \$34.45, \$3.00 for husking; we then have \$31.45 remaining, the sum which each acre produces in the clear.

These statements are sufficient to prove that tilling much soil without much profit is neither beneficial to the farmer, the soil, nor the country. Much might be written profitably on this subject, but it is unnecessary to enlarge. Our agriculturists must be aware that they run over more ground than is for their profit. Famine has prevailed in sweet old Erin. People now live in many parts of Europe in a state of privation and want, who ought to be here among us, cultivating our abused and much neglected soil.

Baldwinsville, N. Y.

W. TAPPAN.

MAKING COTTON TO BUY PROVISIONS.

THE Greensborough (Ala.) *Beacon* says: "A gentleman just returned from Mobile informs us that the boats on their upward trips are heavily loaded with provisions. The Glover, he stated, brought up, last week, 600 hogsheads of bacon. Business men in Mobile, who are well informed on the subject, express the opinion that the proceeds of last year's cotton crop of Alabama will be required to pay for the provisions that have to be bought."

In our April number, we called attention to the fact that simultaneously with the decay of the manufacture of cloth and of iron, we have a decay of the manufacture of corn into pork, and of hay into beef, the effect of which is now being seen in the high price of animal food. Our friends, the planters, are busily engaged in stimulating competition for the production of the things they have to sell, the effect of which is seen in the *low prices* of cotton and rice; and equally busily engaged in destroying competition for the production of those things they need to buy, the effect of which is seen in the present high prices of the superior descriptions of food, and will be seen in the high prices of cloth and iron, when the tariff of 1846 shall have accomplished the object for which its passage was sought—the restoration to Great Britain of her monopoly of the power to purchase the raw products of the earth, and the monopoly of the power to supply the people of the world with manufactured commodities of all descriptions.

WHAT CAN THE AGRICULTURIST DO?

THE necessities of the agricultural community are such, that they readily suggest the condition of one whose living is on the other side of a river on which not a single boat floats; or they may remind one of the story of the ferryman, who was required to carry across the river, and deliver in good condition, a fox, a goose, and a measure of corn. He could carry but one at a time, and yet he knew that if he left the fox and goose together, on either side, the fox would eat up the goose, and if he left the goose and corn together, the goose would eat up the corn.

This fable illustrates more than one point in the condition of the farmer or planter. Their living is at stake. Their lands, year by year, are losing their power of production. How shall he renew their fertility? If he draws upon his cash or stocks for the purchase of manures, it cripples his energies in other directions. Shall he diminish the number of his acres, and thereby acquire means to purchase what will enrich the remainder? It is cutting off a right hand. Shall he go to the books for instruction? They may lead him all round the compass, and leave him in worse condition than they found him. Thus he sails on, not between Scylla and Charybdis only, but where hidden rocks and whirlpools surround him on all sides. He has seen his neighbors engulfed in the waters. They pulled the oar with a strong arm, but strength could not deliver them. They were watchful, but the eyes of Argus could not save them. They were determined to overcome all obstructions, but their resolution was all in vain. They knew not what they were doing.

The farmer would understand his business, but he is unwilling or "too old" to learn. He may admit that he is ignorant of its principles, but he does not perceive the propriety of thorough study. He follows in the footsteps of his predecessors, though he is reminded every year that he and they have not failed to diminish the fertility of the soil with every harvest. What shall be done?

Various remedies are proposed, and each claims that his own is the sovereign specific. One begins with the district school, and teaches every boy agricultural chemistry. But who shall qualify the teachers? Another proposes a State College of Agriculture. But on what plan can this be made available to the masses? Another urges district or county institutions. But whence shall come their funds? Objections and difficulties loom up on all sides, and satisfy every body that every plan but their own *must* prove an entire failure. I sometimes think that, on this point, all are right. Who ever heard of so great, so universal an evil, cured by a single prescription?

In this matter, I incline to follow the *legal* arrangement. Blackstone used to teach that in legislation we must consider, "1st, the old law; 2d, the mischief; and 3d, the remedy." I do not believe that the "old law" is yet fully understood. The mass of farmers are not thoroughly satisfied that they are not well skilled in their trade. They will confess ignorance in general, while they insist that in every particular they know they are right. "Have they not tried experiments in repeated instances, and always in vain?" Or if they yield all this, they fail to appreciate the *importance* of the amount lost by unskilful cultivation. Farmer A raises 20 bushels of wheat on an acre. His neighbor B raises 25. Why make a great fuss about so small a matter as these 5 bushels? Simply because the 20 bushels are entirely consumed in the cost of cultivation; and if this is all, farmer A can't grind a peck

for his own consumption, while his neighbor B has 5 bushels per acre. If each sows 20 acres, at harvest time one has *nothing*, even for a single meal, the other is supplied with two bushels a week, through the year. Is not this something? Or suppose the first can meet the expense of cultivation and support his family, but without laying up a single fip. The other can deposit \$100 each year in the Savings Bank, a net gain from those 20 acres. In a series of years how does this difference magnify! The first cannot afford to repair even his hog-pen, the other just sits down and draws a check which pays *all* repairs or improvements which the progress of time may require.

Taking a wider view of this subject, we are almost surprised at the result of our own figures. Thus, we find it stated by Hon. Marshall P. Wilder, that, "if science or improved breeds would enable the 150,000 cows of Massachusetts to yield one additional quart per day, this, at three cents per quart, would increase the productive capital of the State \$4,500 per day, or \$1,642,500 per annum!" Read too the statement of Prof. Mapes, that "an increase of ten bushels of corn to the acre, through the country, would, if exported, return us more gold than twice our receipts from California." If the 5,000,000 neat cattle of the Eastern and Middle States are one third of them milch cows, an increase in the value of their milk, in the ratio suggested above by Mr. Wilder, would amount to more than \$16,000,000 per annum!

Is it not important that the real state of the case should be presented more fully and more extensively? Our political papers can do no better service than the instruction of the people on this subject. Our religious papers, would they but enter this field, might save many a clergyman "his living," who is now in danger of being starved out of his house and home. How can farmer A, described above, pay a minister's tax of a single dollar? I propose to bring together facts on this subject, touching the various interests of society, that must surprise those who have not examined it.

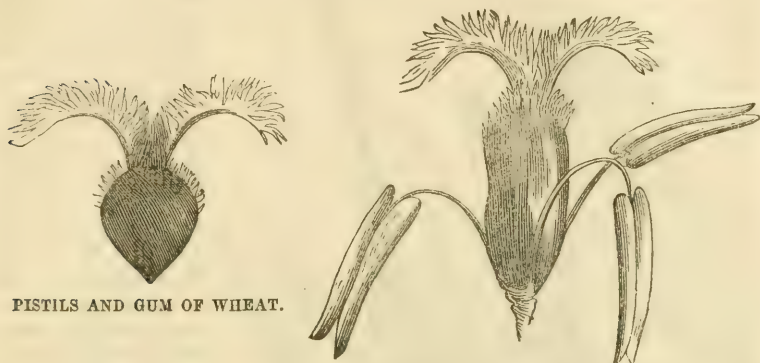
M. P. P.

THE CRISIS OF THE GRAIN CROP.

THIS is a period of much anxiety to the agriculturist, as his chief hope and reliance for a good crop depend in a great measure upon successfully passing this critical season. During the flowering of all the *cerealia*, or corn-bearing plants, it is necessary to fecundity that the weather be warm and dry, with occasional gentle breezes, during which the fragile stamina of the wheat, the barley, the oat, and the rye are suspended, unperceived by the careless observer, and, as they turn their tiny bodies to the sun, burst in beautiful sprays of glittering pollen, which are caught as they descend by the pistils, vivifying the germ, and making a plentiful harvest almost secure to the husbandman. The early rains give the plant strength and *bottom*, and a genial succeeding temperature draws forth the flowers from the chaff-coverings of the ear, and fresh, enlivening winds with it complete the work of fructification. The only evil which remains to be dreaded is an attack from one or more of the various species of smut which attack corn plants. To put our country friends upon their guard against them, and to enable agriculturists to discriminate and report any species which may appear, we subjoin the following account of the whole family:

These fungi are called *uredines*, the plural of *uredo*, which is a term

derived from the Latin word *uro*, to burn, because the discoloration of the parts of plants affected by them produces a burnt appearance. The uredines are chiefly found on the young or old leaves of corn plants, and occasionally on the stems ; but in the last instance, it has been surmised that the indications similar to the uredo are only immature forms of puccinia. There is no



PISTILS AND GUM OF WHEAT.

FLOWER OF WHEAT MAGNIFIED.

THE FLOWER CONSISTS OF TWO PISTILS AND THREE ANTHERS.

stage of growth in which the wheat plant is free from the attacks of the uredo. Early in the spring it is found on the young blades ; and later in the season it often abounds in the glumes and paleæ of the ear, even after the grain is formed. These yellow or orange uredines are of two kinds. One of them, from the oblong form of its spores, is called *uredo linearis* ; the other *uredo rubigo*, whose spores are nearly spherical. *Uredo rubigo* means red rust, and no name could possibly convey a truer idea of its appearance. Both these uredines are closely allied to the rust on the leaves of rose trees, called *uredo rosæ*. Their color varies from orange to a brownish hue, and they cause the parts attacked to look as if they were dusted with rustiness of these colors. They belong to the order *coniomycetes*, or dusty fungus. It is a rare thing to find any wheat-field altogether free from them at any season of the year. When the chaff scales are attacked, the spots look like patches of red gum. Hence red gum is a name sometimes given it ; but it is most frequently known as red-robin, red-rust, or red-rag.

The chaff scale gives no further indication of the character of this fungus than the manner in which it comes out and spots the parts of the plant where it vegetates. To see the form of the spores requires a very high power of the microscope. When magnified, the organization of these fungi is perceived to be beautifully delicate, and the red gummy powder is found to be composed of innumerable spores growing from the spawn threads.

The botanist, therefore, becomes completely acquainted with the distinctive character of the uredo by the aid of the microscope, while the vegetable physiologist is enabled to form an opinion of its peculiar habits and modes of growth. The real habits of this common disease of the wheat plant are no longer veiled by inaccurate observations or popular imaginations. The mystery is cleared up ; and the cultivator, who has often witnessed the discoloration of his crops by this fungus, without any real knowledge of its

nature, may now become thoroughly acquainted with the object of his frequent surprise and annoyance.



FLOWER OF WHEAT INCLOSED IN THE CHAFFY COVERINGS
OF THE FUTURE GRAIN.

Very often the corn-fields have seemed quite to droop under the influence of this parasite. The aspect on such occasions is so sickly as to create serious alarm. But the arrival of a few bright warm days soon dissipates the evil. The genial beams of the sun seem completely to vanquish it, so that it disappears in an astonishing manner, and a healthy greenness speedily succeeds to the sere and yellow tints that have disheartened the farmer. The fact is, that when the sun dries up the superfluous moisture, the fungus cannot spread, and health returns.

We will now proceed to notice the opinion of certain eminent botanists, that *uredo rubigo* and *uredo linearis* are only imperfect forms of minute fungi, which in their perfect state are known by other names. For example,

it is said that the uredo of the rose passes into a condition called *aregma*. So it is considered by Professor Henslow, an eminent and most judicious observer, that uredo in the corn passes to *puccinia*. He published an able paper in the *Agricultural Journal* for 1841 on what he designated "The Specific Identity of the Fungi producing Rust and Mildew;" and his arguments are ingenious and well worthy of perusal. The point is considered by him as fairly established by observation of certain intermediate forms confirming their connection, and proving the identity of their origin. With regard to these appearances, the author desires to state that, in the autumn of 1845, he found in a wheat-field many specimens of yellow-looking blotches on the straw, which seemed to confirm the Professor's opinion. All, however, that the author can

as yet venture to assert is, that some puccinia have clearly the appearance of the uredo before the *septum*, or division of the spores into chambers, is fully developed. In a splendid figure by Corda, these various forms are given with great effect as they burst the epidermis; and the drawing of that incomparable delineator of fungi confirms the opinion that the last observation is the one that is safe and accurate. Questions of this kind will be viewed at first sight as purely botanical, though they certainly tend ultimately to the combination of science and

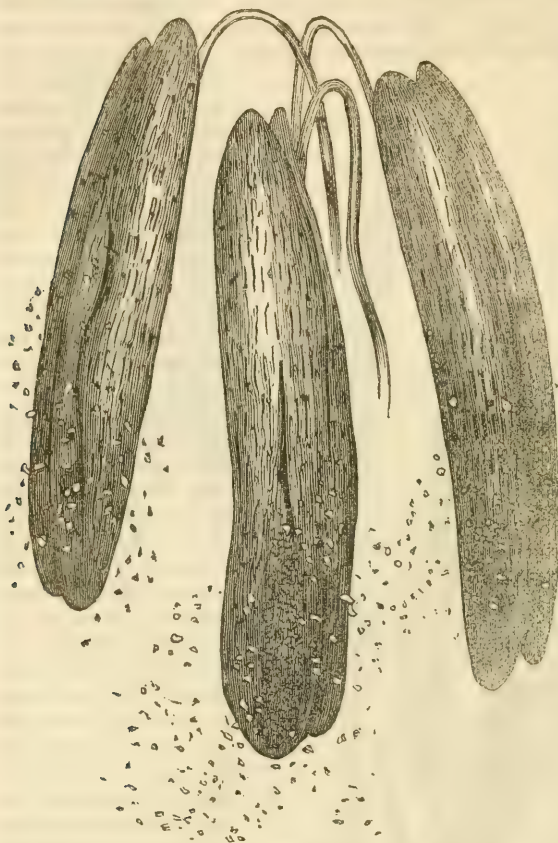
practice; for if certain parasitic fungi, hitherto supposed to belong to genera entirely distinct, can be shown to be specifically identical, there will be a reasonable expectation that any remedy or palliative discovered for the disease in one stage will preclude the necessity of seeking a different corrective in another. Rust and mildew may then be checked by a common treatment. More observations are, however, still required on this curious subject. A remark from Professor Henslow is worthy of notice. He says that the rust seems to be more common and more dreaded on the continent than the mildew, whilst with us the mildew is considered a far greater pest than the rust. "Is it," he adds, "that our climate is better suited to the more complete development of the spores of these parasitic fungi, and that our continental neighbors are more rarely favored with the opportunity of seeing them in their most perfect form?"



FLOWERS OF RYE INCLOSED IN THE CHAFFY COVERINGS OF THE FUTURE GRAIN.

The rust is perhaps the least alarming in England of all the parasites attacking the wheat. Unquestionably it passes off in the way described more readily than any other; but when that beneficial influence of sunshine

is not effectually exerted, a deterioration of the crop takes place. When it is found in later stages of the growth, and on the glumes and paleæ of the chaff, it is more injurious than when it merely appears in the earlier period of growth.



FLOWERS OF BARLEY, OR BURSTING OF THE FUTURE GRAIN.

particularly barley and rye. In places where it prevails, the farmers plough up the frozen surface, so complete is the mischief effected on the young plants.

The next parasitic fungus is the one which so materially affects the flower of the wheat plant. It is much more minute than those previously described. The name given it by botanists is *uredo segetum*. Farmers call it by various appellations, as "smut, dust-brand, burnt-ear, chimney-sweeper;" the last designation evidently arising from its looking exactly like a coating of soot adhering, by some gummy substance, to the young ear.

It reduces the ears of both wheat and barley to a shrivelled state, and has the same effect upon oats. The black masses of sooty powder are the spores of the fungus. Some farmers say they like to see a little of it, because it is always accompanied by a good crop. Certainly, as Professor Henslow well observes, the "little" can only be, with any propriety, on the principle of the less the better. Undoubtedly every ear attacked is destroyed, as is

Another is called by Unger *lanosa nivalis*, with reference also to its coming in time of snow. This fungus is developed beneath the snow, and is excessively injurious both to grass and corn. During the spring of 1846, a description of it was published in the *Gardener's Chronicle*. It appears in white patches, a foot or even more in diameter, tinging the snow with a red hue, arising from the spores of the fungus, which are of this color. When a spore is greatly magnified, the color contents are very perceptible. A completely withered plot is left behind, wherever this fungus has run its course. When snows have come on without previous frosts, it has been known to destroy whole crops,

evident from the first instant it emerges from its hose or sheath. The extreme smallness of the spores of this fungus may be inferred from M. Bauer's investigations. He says the one hundred and sixty thousandth part of a square inch contained forty-nine of them. Hence he calculates that not less than seven millions eight hundred and forty thousand would be required to cover a square inch English measure. It has, indeed, been a question with some persons, whether these appearances are not due to a mass of diseased cells, and that they are not fungi at all. But the answer to this is, that diseased cells would not germinate, which these uredines unquestionably do. There is no apparent difference, generally speaking, between the spores of this uredo in wheat and barley. If the spores of this uredo are so small, what must the sporules be as to dimensions? The highest imaginable power of a microscope could only be expected to exhibit them as a vapory cloud. The next question is, how the fungus acts upon the part of the plant which is principally affected?

When the plant is attacked by this fungus, the first injuries are found upon the interior portions of the flower, which render it completely abortive. In a short time afterwards, the *pendicles*, or little stalks, to which the florets are attached, swell and look hard and fleshy. At length the whole is consumed; and the ear, particularly in the case of wheat, becomes dismantled of all its reproductive organs, and the remainder is powdered over with the before-mentioned black, dusty smut, which has a most disagreeable appearance. M. Bauer, however, states that it has been found in some other portions of the plant. These instances are certainly very rare, and have been noticed by scarcely any observers. In some seasons, immense quantities of it may be seen, during summer, in the corn-fields, long before the rest of the grain reaches maturity. All these ears are, as we have said, destroyed by it, and therefore the amount of the crop greatly diminished. But as its spores are scattered to the winds for weeks before reaping begins, the farmer scarcely sees it during the harvest, and consequently thinks but little about it. This is probably the true solution of the prejudice in its favor.

There is every reason to believe that the fungus enters the plant by means of its sporules being so small that they find access with the ascending sap, by the spongioles of the root. With this sap the sporules circulate, and are developed as has been described.

EFFECTS OF SEPARATING THE CONSUMER FROM THE PRODUCER.

"WALKING with a friend through one of the waste streets of Galway, Ireland, beside the outlet of the lakes, I came where a girl of ten yearsold was breaking up hard brook pebbles into suitable fragments to mend roads with; we halted, and M. asked her how much she received for that labor. She answered, 'Sixpence a car load.' 'How long will it take you to break a car load?' '*About a fortnight.*' Further questions respecting her family, &c., were answered with equal correctness and propriety, and with manifest truth. Here was a mere child, who should have been sent to school, delving from morning till night at an employment utterly unsuited to her sex and strength, and which I should consider dangerous to her eye-sight, to earn for her poor parent a half-penny per day."—*Glances at Europe.*

The first tax to be paid by labor and land is transportation, and that tax has been paid by the people of Ireland to so great an extent, that labor has ceased to have value, and the land itself is now, from one end of the kingdom to the other, passing through the hands of the sheriff. That we have

avoided this state of things here, is due to the fact that we have had, and still have, some protection for the farmer and planter in their efforts to bring the spindle and the loom to take their natural places by the side of the plough and the harrow; but the tariff of 1846 is gradually bringing about a state of things such as will make both land-owner and laborer look back with regret to the days of the tariff of 1842—those days in which the growth and value of labor and land was marked by a duplication in five years of the power to consume cotton and woollen cloth, and a trebling in the same five years of the power to consume coal and iron. The negro sells his labor in only one market, to which he is limited by law. The Irishman sells his labor in only one market, to which he is limited by an exercise of power. Both therefore are slaves. The freeman may sell his labor in many markets, and therefore it is that he is a freeman. British monopoly seeks to allow the people of the world but one market in which to sell, and one in which to buy; and this is the system known by the name of free trade!

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WHAT ARE THE MOST JUDICIOUS MEASURES TO IMPROVE THE
AGRICULTURE OF OUR COUNTRY?

THIS is a question frequently asked, of high importance, requiring serious thought and careful investigation.

Society and the arts are progressive—but progressive only in certain lines, involving long cycles of duration. It is but a few centuries since the northern invader trampled down the arts and literature of Rome, and, despising that intellectual cultivation which depressed the physical energies and pandered only to the vices and luxuries and prejudices of the rich and powerful, trusted alone to the sword for power, and to robbery for a living. In the ninth century it was with difficulty a person of talents could be persuaded to devote his time and attention to the sciences by the promise of preferment and honors. It is now the grand avenue to distinction; and Agriculture, the first and noblest of arts, and the highest embodiment of practical science, except in the dull routine of hereditary usage, is almost wholly neglected for the crowded arena of professional and commercial life. It is time that a reaction took place; that refinement, taste, literature, and science should adorn and enlighten the arts of production, instead of being confined (as they almost exclusively are) to the arts of consumption. Schools of agriculture, and societies for the interchange and diffusion of agricultural knowledge, have been established in Europe to good advantage; but will they answer the wants of the people of this country? Their influence is limited to a small extent, whilst our agricultural possessions are very extensive. The sons of the wealthy alone could have the advantage of a scientific and practical agricultural education, and they have not the spur of necessity to urge them forward in this course. Societies have been extensively diffused over the Eastern and some of the Middle States, and premiums awarded; but owing to the very near equality of many articles that are exhibited for competition, it often makes it difficult for committees to determine which is the best, and impossible to prevent jealousy among the claimants.

Now, in addition to schools and associations, which are useful to the extent of their influence, can there be any other mode of communicating the ele-

mentary principles of agricultural knowledge more extensively? Would not a series of lectures, giving the first elements of mineralogy and chemistry, with their application to agriculture, answer this purpose? The expense of the necessary apparatus would be small, and the required compensation need not be high to obtain competent talents for the service. A lecturer might be appointed for each county or a smaller division of the State, whose duty it should be to lecture for three months in the year throughout, and in various parts of, the several towns in the county, so that each and every inhabitant, without going far from home, might avail himself of the information given.

These lecturers might be paid by the State or the United States, and the information thus diffused would be invaluable. In the first place, it would incite to an increased perusal and understanding of our agricultural papers and periodicals, and a more general reform in our farming operations. It would also lead to a more general appreciation of the value of science as an aid to agriculture, and to greater exertions for the attainment and increase of that knowledge so necessary in every department of the practical business of life. I perceive by B. P. Johnson's Patent-Office Report, for 1848, page 398, that Mr. J. Delafield, of Seneca county, N. Y., had been lecturing in that county with much success, and with essential benefit to the farming interest. This mode of extending agricultural information, sanctioned by the practice of that gentleman, would need no higher authority to recommend it. Could not the interest on the funds of the Smithsonian Institution be brought in some way to bear upon this subject, instead of remaining, as they now are, useless to the great body of the people?

M. F. M.

Bath, N. H., April 15, 1852.

AN HOUR IN A SLAUGHTER-HOUSE.

[THE article which we copy below graphically describes one very important branch of American industry as it is exhibited at the West. It is taken from the *Western Agriculturist*. It well illustrates the benefit of economy in the division of labor, and thus furnishes a lesson for every department of industry.—EDS.]

If any of our readers delight in witnessing the effects of *system* in facilitating labor, let them step into a Cincinnati slaughtering establishment during the killing season.

Aside from the prodigious number of hogs, cattle, sheep, and calves disposed of, there is an interest in watching the machine-like order of the work. The butcher's yard and building is, of course, not a very neat place, while the blood and offal of two thousand hogs a day pass through them. The slaughter-house is situated in some retired hollow, with a small stream passing beneath it, and is generally a cheap, temporary building.

The hogs of each drove are kept in a separate pen till the hour of execution, when a devoted few, say thirty or forty, are compelled, much against their will, to march up a platform within the building. Here, a man with an iron sledge goes among them, and strikes them on the head with a dull, sickening sound, and they fall without a squeal. While in a senseless state, they are thrown upon a grating near the scalding vats, where they are stuck, and the blood flows into the stream below.

The vats are wide enough to place a hog crosswise, and long enough to hold ten or twelve at a time; and there are, in large establishments, two

vats, on each side of which are five or six men, making twenty in all. The water is kept hot by steam, and the carcasses are constantly kept turning and stirring as they pass along, so that when they reach the farther end of the vat, they are stripped of the hair, and are hauled out and hung up by the heels for gutting.

The man who strikes them puts a mark on the leg of each, to show who is the owner. A hog is pushed from the grating, all quivering and bloody, into the scalding water, about once in half a minute, and a clean carcass is hauled out of the other end of the vat as frequently, and also another taken from the gambrel and carried to the hooks as often, where he hangs till the next morning, to cool. For two vats, about fifty men are required.

The next morning, a four or six-horse team appears at the slaughter-house, bright and early, and, piling the stiff carcasses into a huge rack, conveys them to the packer's. The *butcher*, instead of being *paid* for his expense, pays the *drover* something—eight, ten, or twelve cents a head—for the chance; and all the offal belongs to him, including every thing taken from the animal.

At the packer's, which is in a more public part of the city, the hog is weighed, and the two men place his body on a bench. On each side of the bench stand two strong men, with huge cleavers, more dreadful than an executioner's axe, on which they put a keen edge between each blow. One stroke, given simultaneously by each of them, severs the head, and also the hind quarters, from the trunk. These are thrown in different directions, to be trimmed and cured.

One of the cutters turns the trunk on its back, and holds it open, while the other splits it along the back-bone. Each one takes half, and, the leaf lard being torn out, cuts off the shoulders, and at four strokes the sides are cut into the proper form. The hog disappears in different directions, and in about *half a minute* from the time he was put on the bench, another takes his place to undergo the same process. The pieces destined for mess pork are salted into a barrel, headed up, filled with brine, rolled into the street, put on a dray, carried to the river, and the hog may be on his way to New-Orleans, as pork, within twenty-four hours after he crossed the ferry from Kentucky. Much might be said of the mode of curing, particularly of the celebrated sugar-cured hams; but at present we must omit these details.

C. W.

THE PARADISE OF BRITISH FREE TRADE AND DIRECT TAXATION.

"TURKEY taxes all the produce of her agriculture and her shops with taxes and duties amounting to from twenty to fifty per cent. on the cost of production. She only demands from three to five per cent. on all articles of foreign origin that pass through the custom-house."

We take the above from one of the journals of the day, desiring to call the attention of our readers to the beautiful effects of *British* free trade and direct taxation, a favorite subject of declamation among the Solons of our day, who hold that a nation is to be benefited by keeping the plough and the loom apart from each other, and see in the exports and imports the only standard by which to judge of the prosperity of a nation. Turkey is the paradise of British free trade. Not only does she admit all foreign produce free of all duty except from three to five per cent., but she also permits foreign traders to carry their goods from town to town throughout the empire for sale, peddling

them out to her unfortunate people, the consequence of which is, that store-keepers are almost as scarce as manufacturers, and her impoverished cultivators have not even a place at which they can exchange their produce for cloth or iron, sugar or coffee. It is therefore constantly wasted on the ground, and the land-owner and its occupant are reduced to poverty, while the nation itself is the scorn of the world for its weakness. Russia protects her people in their efforts to bring the plough and the loom into connection with each other, and therefore does she grow strong, while her people are becoming from day to day more free. Turkey leaves her people to the tender mercy of British free traders, and therefore does she from day to day become more weak, while her people become from day to day more enslaved; and yet have we among ourselves men who would counsel the adoption of the same measures under which Turkey has seen her manufactures destroyed, and under which her agriculture is gradually dying out. It is time that the farmer should understand that he it is that needs protection, and that without it his farm would have speedily little more value than have those of Turkey, and he himself would become the mere hewer of wood and drawer of water to British monopolists.

FOUNDATION OF THE FRENCH MERINO.

[TRANSLATED FROM THE FRENCH.]

My father, born of a family of cultivators, busied himself in his youth in raising sheep. In 1786, the Queen of Spain made a present to the King of France of a flock of ewes and bucks, selected from the very best merino blood in the country. Half of this flock was sent to Rambouillet, where it still exists. The other half was ceded by the King to a proprietor, M. de Chenorier, who placed them on his farm at Croissy, about four leagues from Paris. At this date my father was twenty-seven years of age. As soon as he heard of the arrival of the flock he went to see them, and renewed his visits yearly, to assure himself if our climate would agree with this new breed, and to learn their produce of wool and flesh, as compared with the native breeds; when he became convinced that the climate agreed with this new race, and that they offered a great advantage from the quality of wool obtained, as well as for their flesh, compared with the then existing breeds in France. He purchased at the first sale of the produce of these sheep, which took place at Croissy in 1800, one ram and eight ewes. The ram was four years old, and weighed 125 pounds, and carried 12 pounds of wool, and the ewes averaged 9 pounds in its pure, unwashed state. He continued to buy yearly from two to four sheep, until 1810. In 1811, he bought 50 ewes and 5 ram lambs; in 1818, he bought 54 ewes. At this date the whole flock was sold at Croissy, at an average of from 120 to 300 francs each.

The pasturage at Croissy was much better than that at Rambouillet, and the flock superior. This is why my father made his acquisitions here in preference to those at Rambouillet. In 1821, he bought a buck of Rambouillet. Notwithstanding these two flocks were of the same family, he obtained a great advantage by an alliance of blood of the flock of Rambouillet with his, being of the same lineal descent, but a complete separation having taken place since 1786 between the two flocks. From 1821 to 1829 he bought 5 bucks at Rambouillet. At this epoch my father ceded to me his entire flock of merinos, which numbered 209 ewes from three to six years old; 176 ewes from one to two years; and 90 yearling bucks. In 1832, I

bought the 55 ewes submitted at the public sale at Rambouillet. Since then, I have bought several ewes and rams to maintain the renewal of blood of my flock, at times necessary. In choosing reproducers in animals, the best conformed, bearing the greatest quantity of the best quality of wool, was my guide, and by this constant care and study I have realized from my best rams twenty-four pounds,* and from my ewes eighteen pounds,* of fleece wool.

The good direction given by my father to his flock acquired to him the greatest reputation throughout France. No person from the States visited our flock previous to the 11th of May, 1846. Then we had the pleasure of a visit from Mr. John A. Taintor, of Hartford, to whom I sold two rams and seven ewes. Since then I have continued each year to effect shipments of rams and a few ewes to Mr. Taintor, who succeeded in making this breed prosper in America as it has in France. I have also had the satisfaction of a visit from Mr. Isaac de Forrest of New-York, Mr. Sanford of Orwell, Vermont, and Mr. S. W. Jewett of Middlebury, Vermont. To the latter I sold, in 1851, 82 ewes and 18 bucks. In 1852, I sold him 94 ewes; and, to deliver in 1853, I have sold him 90 ewes. I also received a visit from Mr. Parker and Mr. Howard, of Champaign, Ohio, to whom I could not sell any ewes this year or next, to their great regret.

From the various essays made by my father to improve the merino breed, and those which I have continued to effect on the same principles, we have arrived at the conclusion that, in order to improve the breed, we must not allow our ewes to yearn lambs till three years old, and to use no bucks until they had arrived at full maturity. It was necessary to feed them upon sound land; dry in preference to damp pasturage; and to renew the blood of the flock every five or six years. If you are longer in renewing it, one can maintain the same quality in his flock, but cannot ameliorate it. We separate the ewes into as many lots as we have bucks, taking particular caution not to use a ram of any defect to ewes of the same defect. By these means thoroughly executed, we arrive at the improvement of the race.

We did not decide upon exhibiting our flocks for the prize until 1844, when the Agricultural Assembly at Paris appointed a commissioner to visit the best flocks in our country. As soon as the commissioners made their report, the Minister of Agriculture granted me the great gold medal. In 1845, the Agricultural Assembly met at Gregnon. I sent there 350 ewes and 4 bucks for exhibition. The first prize was accorded me and my father, who was then eighty-six years old, and received it from the hands of the Duke of Nemours, conducted by my two sons. To the general concourse, which took place at Versailles, in 1851, I and my colleague, Monsieur Cugnot sent each of us three rams, and the first premium was granted us.

*Widerille, Commune de Crespières, Seine et Oise,
le 7 Avril, 1852.*

VICTOR GILBERT.

SOUTH CAROLINA.

THE *Edgefield* (S. C.) *Advertiser* grieves over the spirit of emigration, spreading so rapidly in that State; and holds that, "Possibly, people may thrive faster and get rich quicker by moving. It is barely a probability—far from a certainty. But it may well be said to be an undoubted fact, that, in this State, every industrious man can obtain not only the necessaries, but also most of the luxuries of life. Then why be discon-

* Twenty-seven and twenty pounds English.

tented? Rely upon it, certainty is always to be preferred to probability, and still more so to possibility. A rolling stone gathers no moss, is an old and true adage; '*Qui fit Mæcenæ*,' &c., still older. Then stay at home, and work, and be assured you will never have cause to regret it. At any rate, remain somewhere in your native State."

South Carolina is resolved that the spindle and the loom, the hammer and the anvil, *shall not* take their places by the side of the plough and the harrow, and the effects are seen in the exhaustion of the land, and its abandonment by the impoverished owner. Is it not time that South Carolina should awake to the fact that they are destroying themselves in the effort to destroy their neighbors?

PARSNIPS AS A FIELD CROP.

GOOD FOR HORSES AND CATTLE, FATTENING POULTRY, ETC.

THE *Rural New-Yorker* has the following judicious article on this valuable root:—

"Parsnips are sometimes cultivated as a field crop, and have been judged nearly equal to the carrot as food for stock. They are of much intrinsic value, whether considered in this light or as one of our most delicious table vegetables. The product, when grown on a genial and properly prepared soil, is as great as that of any other root, and its fattening qualities are thought superior to any other.

"On the islands of Jersey and Guernsey the parsnip is extensively cultivated, and it is said that all the pork on the latter island is fattened with this root, and is noted for its delicacy and flavor. It is fed to swine both raw and cooked, and is eaten by them in either state with great avidity. In the fattening of cattle, it is found in Jersey 'to be equal if not superior to the carrot, performing the business with as much expedition, and affording meat of exquisite flavor, and a highly juicy quality.' The animals are very fond of it. A lean ox may be perfectly fattened in three months by feeding him one hundred pounds a day of sliced parsnips and a little hay. As early spring food for milch cows it proves profitable. When fed in connection with cut straw and hay, and a little meal or bran, the flow of milk is increased, and the color and flavor of the butter is improved. For horses, as an *alterative* food, it is equally grateful with the carrot. 'A peck cut fine and mixed with equal quantities of cut straw and two quarts of oats, with a handful of salt, makes,' says the *American Farmer*, 'a most invigorating meal for a horse; a few such feeds a week open his hide, soften his hair, and keep his system in a healthful condition.' But as a general food, the parsnip is thought too fattening, and to possess a tendency to reduce, rather than improve the strength of the horse. In fitting poultry for market, this root is mentioned in the *Book of the Farm* as having been used with success.

"The soil which best suits the parsnip is a deep and fertile sandy loam. But they grow well on heavier soils than carrots or turnips, and will flourish on almost any soil, if it is rich, well pulverized, and dry. If the soil be not naturally rich, it must be made so by abundant supplies of well-rotted manure. The land should be ploughed very deeply, and the product will be much increased if it is also subsoiled, that the roots may go down as far as they choose.

"The seed, which should be planted as early as the ground can be prepared, may be drilled in, in rows about twenty inches apart. From two to three pounds per acre is required, and it should be of the last season's growth, as if kept longer it is very apt to fail of vegetating. Some recommend the soaking

of the seed for twenty-four hours, and then drying in plaster and ashes. Sand is frequently mixed with the seed in sowing, in order to facilitate proper thinness in its distribution. The 'Isle of Jersey' is recommended as the best variety.

"The cultivation is much the same as that recommended for carrots. When the plants are two or three inches high they should be carefully hoed, and thinned out to about six inches apart in the rows. They should be hoed as often as the weeds render it necessary, and their growth is improved by keeping the soil light and open by frequent stirring.

"Upon ground where no water will stand, they may remain all winter without injury, and even with manifest improvement. Those required for winter use should be dug as late in the fall as the season will permit; and in the spring, as soon as the frost leaves the earth the farmer can commence feeding from them. When dug to store away, they should not be closely trimmed either in top or root, and must be stored away in a cool place, and covered carefully with earth, as exposure to air or heat wilts and injures them."

DISINFECTION OF STABLES.

BY J. W. GLOAG, V. S., ELEVENTH HUSSARS.

"To the Editor of the *Veterinarian* :

"SIR:—On perusing the last number of your journal, I was much pleased with your remarks on peat charcoal, as a disinfectant. It strikes me that we have very much neglected to use these adjuncts to health. In a former number of the *Veterinarian*, you drew attention to this subject, when comparing the qualities of the various disinfectants, and you there recommended the impure sulphate of lime as a cheap article for strewing over the pavement of stables, which is a most beneficial practice. We constantly find stables which, under any circumstances of ventilation, are impure. This generally arises from defective drainage, for the want of which the urine soaks through the stones into the soil unto saturation, and then constantly sends up its noisome fumes. Drainage is of the greatest importance, and this is a subject which appears to me generally very little understood, and usually very much neglected; hence the difficulty which at times arises of maintaining a sufficiently pure atmosphere, consistent with the necessary warmth of stables. It has struck me that it might be advisable, as an adjunct to good drainage, (or even in the absence of it,) to lay down a bed of peat charcoal on the impure sulphate of lime—say one or two feet thick—and principally towards the rear of the stalls, upon which the stones could be imbedded in mortar. With these precautions, it would take a considerable time before the disinfectant would be thoroughly saturated; but still the evil day (if drainage were neglected) would arrive.

"I am quite convinced, if people who lay out their property in horses would only consider their own interest, they would take the most efficient means of draining and ventilating their stables, and that the expense would be very soon repaid in the health of their horses, and by the great saving of litter. But I fear that the veterinary practitioner would not get so much to do. When the Eleventh Hussars were quartered in Hounslow, in 1848 and 1849, the stables were all repaved; and in some of them, on lifting the stones, the stench was so horrible as to be perfectly insupportable, the soil proving sat-

urated to about two feet in depth. Quicklime was strewed in the stable, and all the doors and windows left open, and the place vacated some days, before the workmen could proceed with their work. We may well conceive how disease may be generated from such fruitful sources; and what took place in those stables happens in thousands. How frequently do we hear of a certain set of stables being considered unhealthy, although possessing the same means of ventilation as the rest; and these stables will often be found to have an offensive, impure smell, although, perhaps, absolutely cold. This arises from the defective drainage, and shows that the attention of owners of horses cannot be more usefully directed than to this point."

In commenting on the above from a London publication, the "*American Veterinary Journal*" makes the following very sensible and practical observations. His suggestions remind us of the great, the almost endless variety of means which the agriculturist may adopt to promote his own interests:—

"Our plan is, that each stable keeper shall supply himself with a quantity of powdered charcoal, a limited quantity of which is to be sprinkled every morning over the dung-heap. For a stable averaging twenty horses, half a barrel of charcoal daily would not be too much; the more there is of it the better for the farmer, and indeed for the whole human race. For then many of the diseases which have of late attacked our fruits and vegetables might be arrested, and perhaps wholly prevented. Much of the fruit now brought to market is a direct cause of diarrhœa and dysentery.

"It will be seen, as we proceed, that the farmer will be the one most benefited by this operation; and we venture to say that any sensible man would be willing to furnish the requisite quantity of charcoal, provided he has the privilege of purchasing the manure. He certainly would not object, when purchasing manure, to pay the additional cost of the charcoal; for it surpasses all other substances in the power which it possesses of absorbing ammonia, and the value of manure is increased in proportion to the amount of ammoniacal salts which it contains."

HOW PROTECTION BENEFITS AGRICULTURE.

"THERE is a farm in Standish, Me., consisting of eight acres, including yards, building, &c., from which was gathered last fall 1,750 bushels of apples."

Wherever the loom and the anvil take their natural places by the side of the plough and the harrow, we see that men obtain large crops from small surfaces, and that both the land and its owner become enriched. Wherever the plough and the harrow stand alone, we see them obtain small crops from large surfaces, and the owner of the land becoming poor, while the land itself is exhausted. We have here a yield of 1,750 bushels of apples, worth probably little less than \$2,000, from a farm of eight acres, being \$250 per acre, while the farmer of Illinois obtains from the richest land in the world forty, fifty, or sixty bushels of corn, which he sells at 25 or 30 cents per bushel; and yet he too might raise his apples, his strawberries, and the various other products of the earth that would pay him by hundreds of dollars per acre, if he would but aid in bringing the miner of lead and the smelter of iron and copper ore to the side of himself and his fellow-citizens.

FARMERS AND BOOK-LEARNING.

THE knowledge of manures is of itself a great science, requiring thorough study and careful discrimination. Our habits have been to confine ourselves to almost a single kind of fertilizer, using this, so far as we could easily obtain it, on all soils alike. But this is a most wasteful kind of farming. Suppose you have two fields, in one of which the soil consists of all the elements required for the crop except one, while the other contains but one or two that are useful. The unskilled farmer divides his stable manure equally between the two; and yet in the one case the soil must be almost created, while in the other only a single element of that manure is of the least service. Is not such practice wasteful? Had the farmer purchased the single element wanting in the one, and applied it to that field, and used all his barn-yard manure on the other, he might have secured a paying crop from each. Perhaps he secures this from neither, for he is obliged to stint both, and neither can produce a good crop. As well might you expect a man already worn down by severe toil to perform the labor of a fresh hand.

If a man were to undertake the manufacture of cloth or of leather, he would not expect to succeed without the proper use of the proper material. Nor would success be expected without a due regard to all the principles involved, nor unless the most favorable conditions were secured for their due development. So of all artists. The shoemaker cannot dispense with his wax or his leather. The blacksmith needs his tongs as well as his forge. The carpenter will never expect to earn his price for a day's work unless he is provided with saw, hammer, chisel, square, etc., and even his sand paper and dog's skin. But the farmer seems to expect profitable crops, neither knowing whether his soil contains all that is required to produce them, nor even trying very systematically to provide what may be supposed to be wanting.

Let us assume, for example, that a certain lot, at the outset, should yield annually crops of corn containing three thousand pounds of inorganic matter. If that piece of ground is planted with this crop for three successive years, it would, with that degree of fertility, have consumed in the form of corn alone 3,060 lbs. of potash, soda and lime, 1,440 lbs. of magnesia, 4,050 lbs. of phosphoric acid, 270 lbs. of sulphuric acid, and 90 lbs. of silic. Were these crops returned to the same field, there would be no deterioration, of course. But they are carried to market or exchanged for coffee, sugar, broadcloth and cottons, and worn out, or otherwise lost to the land. Being thus lost, it has become bankrupt of the lime or phosphoric acid, or of some other element, and its power of production is gone. It is in the condition of the shoemaker who has leather, last, linings and thread, but no awl or perhaps no wax. He is as completely without the power of making a shoe as if he had *nothing* to do with. The only superiority of his present condition, over that of entire destitution, consists in the comparative facility with which he can prepare for future operation.

"But," says the farmer, "I understand all this, and need no such instructions. I know what soil and what field will produce the most corn, and you need not warn me against expecting a good crop from a sandy plain."

True, perhaps; but you are content with half a crop, where it might be doubled, and the increased crop would be nearly all profit. Another says, "I have the experience of many years to guide me, and am assured also that my father before me did as I am doing, and he always obtained good crops." Ay,

there is the rub; your father before you was constantly taking more from the soil than he returned to it, and of course it was always becoming poorer and poorer, and you are doing the same thing, while the soil is becoming less and less able to endure the loss. Hence the returns it makes to you are constantly decreasing.

A healthy, vigorous man may survive the exposure if you take away his clothing for a short time, even in the depth of winter; but continue such a course, and the strongest and heartiest will at last freeze to death. So your fields, if they have heretofore been able to produce a remunerative crop, are becoming less and less able to endure what is required of them, and may soon become, without entire renovation, completely worthless. M. P. P.

C A N K E R - W O R M S .

[A LATE *New-England Farmer* published the following valuable article on this important subject. Dr. Harris is one of the best entomologists living. We commend it to the attention of every farmer.—Eds. P., L., and A.]

CANKER WORMS.—Canker-worm moths have already made their appearance. My trees were tarred on the 10th of March, and many of the moths came out of the ground and were caught in the tar during the night of the 13th instant. Others may be expected till the end of the month, and will endeavor to ascend the trees in order to deposit their eggs. A few of the parent insects may lay their eggs on the trunks of the trees; but the greater number proceed to the extremity of the branches, and deposit them in small clusters, upon the twigs and buds. The trees most subject to the attacks of the canker-worm are the apple, cherry, plum, mountain-ash, linden, and elm. When trees have been exposed to the unchecked depredations of these insects during several successive years, they become impaired in vigor and decay prematurely. In order to protect them, they should be tarred seasonably and repeatedly in October and November, and again in March; and some other approved and effectual remedy should be employed, to prevent the parent insects from ascending the trunks and laying their eggs. A large proportion of the insects that rise in the autumn are wingless females; and, on the contrary, more males than females ascend in March. It seems difficult to account for this disparity of the sexes at these two seasons, unless some of the females survive the winter upon the trees, to pair with the males in the spring. I am not aware, however, that any observations have been made confirming this suggestion. The eggs are hatched about the first of May. The young canker-worms, then less than a twentieth of an inch in length, immediately conceal themselves in the opening buds, and begin to eat the leaves before fairly expanded. They are very injurious to grafts, and sometimes entirely destroy the buds before their presence is discovered or suspected. A thorough syringing of these, and of small trees and shrubs, with a solution of whale-oil soap, has appeared to be a good remedy. This application may be made in May and early in June. When trees infested with canker-worms are suddenly jarred or shaken, the worms drop off and hang suspended by threads, but soon climb up again by means of these threads. If, however, the connection of the dangling worms with the trees be broken off by striking the threads with a pole, the insects will have no means of mounting the trees

again but by creeping up the trunks, and this they may be prevented from doing by a belt of tar about the trees or by leaden troughs filled with oil.

Many kinds of destructive insects are found to prevail and to disappear at irregular intervals. Beginning with a few, they continue to increase in numbers during several successive summers, till at length, after a season marked by an extraordinary abundance of them, they retire from the scene of their depredations, not to return in the same force for several years. During such intervals, when none or few are seen, vegetation, if not too much exhausted, has time to recover before the appearance of new and successively increasing swarms of the spoilers. Among the insects whose irregular visitations and disappearance have been observed, are rose-bugs, cherry-slugs, grasshoppers, apple-tree caterpillars, salt-marsh caterpillars, and canker-worms. The cause of the disappearance of these insects seems not to be well understood. Various reasons have been assigned therefor, such as wet weather, cold winters, pestilence, and the diminution of their accustomed food. The true cause seems to have been overlooked, namely, the rapid increase of the natural enemies of these insects, which, in the course of a few years, become so numerous as to overpower them completely, and put a sudden stop to their depredations.

Canker-worms have many enemies. They are devoured by moles and by various kinds of birds, such as the king bird, oriole, black-poll warbler, black-throated bunting, chickadee, and especially the cherry bird, which lives almost entirely upon them till cherries begin to be ripe. They are eaten by a very large and splendid green beetle (*Calosoma scrutator*) that appears about the time when these insects begin to leave the trees. These beetles do not fly, but they run about in the grass after the canker-worms, and even crawl up the trunks of the trees to catch them as they come down. During the prevalence of canker-worms, in the years 1839, 1840, and 1841, great numbers of these beetles were observed in Cambridge, where they have been seldom seen at other times, and many were thoughtlessly crushed under foot in paths and the highways. The potter-wasp, (*Eumenes fraterna*,) an insect rather smaller than the common brown wasp, fills her clay cells with full-grown canker-worms, often gathering eighteen or twenty of them to supply her future brood with food. A four-winged ichneumon fly also stings them and lays in each one a single egg, from which is hatched a little maggot that consumes the fat of the canker-worm, and causes it to miserably perish. I have seen one of these ichneumon sting several canker-worms in succession, and swarms of them may be observed around the trees as long as the canker-worms remain. Among a large number of canker-worms, taken promiscuously from various trees, nearly one third were unable to finish their transformations, in consequence of being preyed upon by the maggots of a two-winged fly, or *Tachina*. Even the eggs of the canker-worm moth have their parasites, which destroy great numbers or prevent their hatching. This kind of parasite is a tiny four-winged fly, a species of *Platygaster*, which goes from egg to egg, and, puncturing them, drops one of her own still smaller eggs in each. Sometimes every egg in a cluster will be found to have been thus punctured and seeded for a future harvest of the *Platygaster*. The young parasite, hatched within the canker-worm egg, the shell of which, though only one thirtieth of an inch long, serves for its habitation, and the contents for its food, is an exceedingly minute maggot, which becomes a chrysalis within the same shell, and finally is transformed to a *Platygaster* fly like its parent. All these enemies will be found to abound when canker-worms have prevailed during several years; and to them chiefly, if not alone, I cannot but attribute the sudden check that was given to the further increase of these destructive

insects in the summer of 1841, when their ravages seemed to have reached their height in this vicinity. From that time till the year 1847 scarcely a canker-worm was to be seen here. But the race was not extinct; and enough continued and multiplied, year after year, to seed the ground, on their descent into it, for annually increasing harvests. They are now evidently gathered in greater numbers; and, unless a timely check be put to their further increase by natural or artificial means, they will continue to multiply and spread desolation in the same places that their former generations have laid waste.

T. W. HARRIS.

Cambridge, March 15, 1852.

PROTECTION AND COMMERCE.

AN argument upon which free-traders base some of their strongest appeals is, that if American manufactures are protected, American commerce must suffer; if fabrics were made here which are now made abroad, those who transport them here from abroad would be deprived of their employment. They admit that protection would stimulate labor, but say that its effect upon commerce would be just the reverse.

Suppose now that John Stokes should settle in Oregon, away off on the banks of the Columbia river, and betake himself to farming. The soil is favorable and the climate good, and in due time, by a reasonable amount of work, John harvests a fair crop of wheat. The next thing is to get it ground. But though the Columbia is a fine stream, and though the creeks that run into it are full of places that Nature intended on purpose for mill-dams, there are no flouring-mills within some hundreds of miles. So John calls in the assistance of the flat-boat men, and the raftsmen, and the steamboat agents, if he can find any, to take his wheat some hundreds of miles down to the settlement to get it ground. And when he wants a barrel of flour, all he has to do is to get them to bring him one. Very simple, isn't it? To be sure, it is a little expensive for John to pay for all this carrying the wheat backwards and forwards, besides his trouble in raising it, but man does not live for himself alone, and only see how he encourages commerce!

By-and-by there comes along some meddlesome fellow, and proposes to set up a flour-mill right by John's farm. John is heartily in favor of it, for it is clear that it will save him not only time, but trouble and expense, if there are no transportation charges to pay. But straightway the flat-boat men, and raftsmen, and steamboat agents, if there are any, raise a great hue-and-cry, saying, in the language of Mr. Webster, "Where shall we go? What's to become of *us*? If you get your flour ground at home, John, don't you see you'll be taking the bread out of our mouths? What business have you to break down commerce in this way? Look at these rafts, and flatboats, and steamboats—noble monuments of your country's enterprise. They'll all lie rotting in the streams, John, if you don't give them work to do." And so honest John Stokes says he believes he don't want any mill after all, and goes on earning his own living, and enough more to pay to commerce to give it a living too.

Now the meddling fellow aforesaid, doubtless influenced solely by his desire to bring "grist to his mill," mounts the stump of one of the trees that John has cut down, to persuade John Stokes, and the flatboat men, and raftsmen, and steamboat agents, if there are any, that they are all mistaken.

Whether he will make it out we cannot say, but we think he *might* appeal to them somewhat in this way :

"If you, John, did not have to pay a dollar to these men every time you get a bushel of wheat ground, you would be every time a dollar the richer. And if you were a dollar the richer, you would have a dollar the more to spend. And you would spend it, too, in buying things down at the settlement, where there are a great many things to be bought that you couldn't raise on your farm if you should try till doomsday ; for some of them won't grow up there, and some don't grow at all. And if you commercial gentlemen should get a dollar for bringing these things up for John, why won't it answer just as well as if you got it for carrying the wheat ? And the richer John gets, the more he'll be able to buy down at the settlements, and consequently, the more you'll have to carry. But if it takes all he can earn to just pay for carrying wheat back and forth, you'll never get any more to carry than you do now.

"And besides, John, if I come here and set up my mill, and make money by grinding your wheat, *I* shall have some money to spend. There'll be *two* of us up here, commercial gentlemen, to employ you, instead of one. But if I don't get any work to do, I shall have nothing to spend, and so I shall have no need of you. Depend upon it, John, and commercial gentlemen, the way to get rich is not to keep your neighbors poor. The more we all earn, the more we spend ; and what we spend somebody else gets ; and there is nothing at all in the way to keep us from all getting rich together."

But the commercial gentlemen listen without being convinced, and think that the miller, although he is a miller, can't see as far into the millstone as they can. So they shake their heads, and go on shoving their boats up and down stream with John's single bushel of wheat. The miller moves off, or gets starved to death, just as he happens to fancy, and by-and-by poor old John himself gets worn out with hard work and dies, and then there is not even a bushel of wheat to carry, and the flat-boat men and the raftsmen and the steamboat agents, if there are any, are left to meditate upon the uncertainties and misfortunes incident to all mundane and mercantile affairs.

[Having read the above excellent article from the *Albany Evening Journal*, we invite our readers to the consideration of the fact, that in all those countries in which the farmer or the planter has to carry his wheat to a great distance to have it ground, or his food or his wool a long distance to have them converted into cloth or iron, trade diminishes, as is seen in the case of Ireland, India, Portugal, Turkey, and all other countries subject to *British* free trade ; whereas in all those countries which seek freedom of trade by aid of efficient protection, to wit, Germany, Russia, France, and Belgium, trade increases because there is a constant increase in the quantity of things produced in which to trade.—Eds.]

PUBLIC LIBRARIES.

BOSTON.—Athenæum, 50,000 vols. ; State Library, 8,200 ; Boston Library 12,700 ; Social Law Library, 4,000 ; Bowditch Library, 2,300 ; Boylston Circulating Library, 3,000 ; Amer. Acad. of Arts and Sciences, 10,000 ; Medical Library, 3,000 ; Mass. Historical Society, 8,000 ; Mechanics' Apprentices' Library, 3,500 ; Mercantile Library Association, 8,000 ; New-England Historical and Genealogical Society, 1,500.

NEW-YORK.—N. Y. Society Library, 35,000 ; Mercantile Library, 33,000 ;

Astor Library, 25,000 ; Apprentices' Library, 14,000 ; N.Y. Historical Society, 20,000 ; Columbia College, 17,000 ; Union Theological Seminary, 18,000 ; Theological Institute, 10,000.

PHILADELPHIA.—Apprentices' Library, 14,000 ; Am. Academy of Natural History, 13,500 ; Mercantile Library, 13,500 ; Philadelphia Library Co. 61,000 ; American Philosophical Society, 20,000 ; German Society, 18,000 ; Philadelphia Athenæum, 11,000 ; Pennsylvania Hospital, 10,000.

The total of 140 public Libraries is, 1,773,900 vols.

OPERATION ON A HORSE WHILE UNDER THE INFLUENCE OF CHLOROFORM

[The following article from Dr. Dadd's *American Veterinary Journal* is an illustration of the beneficent results which are to follow from the discovery of that wonderful *pain-killer*, chloroform. Not only our own species, but our domestic animals, are to receive immense benefit from it. It will be a matter of much interest to those who have animals to which they are peculiarly attached, as also to those which possess great value, to avail themselves of such facilities for curing diseases, healing wounds, &c.]

We presume it is not generally known to our readers that domestic animals are as susceptible, in a greater or less degree, to the action of the above agent, as the human subject. We are satisfied from various experiments that the judicious application of chloroform is calculated to prevent a vast deal of pain in an animal about to undergo any painful operation. We were called, a short time ago, to see a gray mare, about nine years old, of the nervous temperament, owned by a gentleman of this city. The animal had just received a severe wound in consequence of running away and coming in contact with the shaft of a vehicle. The animal appeared to labor under considerable excitement ; pulse quick and wiry ; respiration hurried ; violent twitchings of the humeral and pectoral muscles. On an examination of the wound we found a laceration of the skin and fascia, commencing four inches below the point of the olecranon (or point of the elbow) on the outside of the off fore leg, continuing down to the centre of the carpus, (knee.) The upper portion of the integument being also lacerated crosswise, the flap presented a triangular appearance. The tendon known as the *extensor metacarpi oblique* was divided. Two small tendons, which operate in the extension of the leg and foot, were also severed. The periosteum, covering the bone, was also lacerated in several places.

Taking into consideration the great pain the animal suffered in consequence of the large surface exposed, and the extra pain the animal must necessarily suffer in sewing up the wound, we thought it an act of humanity to administer chloroform. The animal was accordingly cast in the usual manner, having previously strewed the ground with straw, to break the fall and prevent concussion. A bundle of straw was then placed under the head of the animal, and that firmly held down by an assistant. The wound having been carefully washed, and all extraneous matter removed, a sponge, saturated with two ounces of chloroform, was then applied to the nostrils. In a few seconds, the pupils became dilated, difficult respiration set in, (which soon subsided,) the pulse became soft, and the animal appeared perfectly insensible. Knowing it to be a matter of impossibility to unite the divided tendons, the principal one

having been torn from its attachment at the carpus, (knee,) we secured the ragged and pendulous portions, and proceeded to bring the skin in apposition, where it was confined by interrupted sutures. Twelve stitches were taken in all, about one inch apart, leaving an orifice of half an inch, at the lower part of the wound, for the escape of fluids. A pledget of linen, moistened with tincture of myrrh, was then applied, and over the whole a bandage. The casting apparatus was then unbuckled, and in a short time the animal got up and walked to her stall. The animal showed no signs of pain, except once during the operation, and this was owing to the evaporation of the chloroform; on another ounce being applied, the animal quickly relapsed into its former state of insensibility. The wound healed kindly, and the animal is now free from lameness.

GRAPE CULTURE.

[THE following article was written by Mr. Levi Brown, a very sensible and accurate experimentist, and appeared in the *Journal of Agriculture*. It may be made useful to the farmers of our Northern and Eastern States, who find it difficult to cultivate this fruit to their satisfaction.—Eds.]

Seven years ago last spring, I planted a number of grape vines—among others, the Isabella, and a few specimens of the native white and black varieties. One of the Isabellas was set out on the south side of a shed, another planted in the open ground and tied to a trellis, and a third was placed at the warm side of a large rock. This latter vine has borne fruit abundantly for the three or four past seasons; ripens well, and is free from mildew. The bunches of grapes upon the north side of the rock, upon which the sun scarcely shines, ripen tolerably well; but they are not so perfect as those more exposed to the rays of the sun. During the very warm weather of the two or three first weeks in September, the rock imbibed so much heat during the day that it retained a portion of its heat through the night, and very much hastened the early maturity of the fruit, and ripening of the wood, so that the branches withstand the winter without any protection, while those upon the shed and trellis “winter kill” very much, unless artificially protected. Both leaves and fruit upon the vine trained upon the south side of the shed mildewed badly the last season, and not a single grape ripened. The grapes upon the trellis did not mildew, but retained their green color till destroyed by frost. All my native grapes shared a similar fate, except those on a vine that clambered over a large rock, the fruit of which ripened well. We have no fruit more easily raised than many varieties of our native grape, many of which are of good quality, and can be greatly improved in size and flavor by careful cultivation. Give a grape vine a fair start by a proper preparation of the ground at the time of setting it out, suitable manuring each successive year, with a tree, fence, frame-work, stone wall, or what is better, a large sized boulder rock, to climb over, and it will scarcely fail one year in ten to richly reward the owner for all trouble and expense. If thousands of the large rocks that are seen in many sections of New-England, near farm-houses, were covered with a hardy grape vine, they would in summer present to the eye a beautiful mound or hillock of living green, instead of a hard, rough-visaged rock; thus adding much to the looks, comfort and pleasures of many a home in the hilly, granite regions of our Eastern States.

VALUE OF BARN-YARD MANURE.

It is now pretty generally admitted that the chief analytical criterion of the relative value of different kinds of manure is the amount of ammonia they contain. From several analyses by Messrs. Lawes & Gilbert, it appears that a "ton of rich box manure," or manure produced by fattening animals with rich food in boxes, contained $14\frac{1}{2}$ cwt. of water and $5\frac{1}{2}$ cwt. dry substance; the latter containing a large quantity of mineral matter, and nitrogen equal to 20 lbs. ammonia; while manure made by eating, treading, and wetting straw, and rotted to the same degree, contained the same amount of water with less than one half the important minerals, and nitrogen equal to only 5 lbs. ammonia. Most farmers are apt to imagine that "a ton of manure is a ton of manure," irrespective of its origin; and think if they are about the same to the eye they will be the same to the plant: but it is not so. A ton of manure made by sheep eating clover hay would be worth three tons of that made by eating straw; and a ton from the consumption of peas or oil-cake would be worth as much as eight tons of the straw-fed manure. The value of the manure depending, other things being equal, on the amount of nitrogen in the food consumed, and not so much as is sometimes supposed on the kind of animal producing it.—*Genesee Farmer*.

[We can hardly subscribe to the doctrine of this correspondent, that the value of all manures depends upon "the amount of ammonia they contain." This seems like saying that the value of all kinds of food depends upon the amount of butter or salt, or of some other one ingredient. That manure is most valuable which supplies the elements that are absent from the soil. This may be nitrogen, or it may be something else. As the sentiment is afterwards qualified, it is no doubt correct. "Other things being equal," the value of animal manures depends chiefly on "the amount of nitrogen in the food consumed."—Eds.]

WHAT ARE TREES MADE OF?

If we were to take up a handful of soil and examine it under the microscope, we should probably find it to contain a number of fragments of wood, small broken pieces of the branches, or leaves, or other parts of the tree. If we could examine it chemically, we should find yet more strikingly that it was nearly the same as wood in its composition. Perhaps, then, it may be said, the young plant obtains its wood from the earth in which it grows. The following experiment will show whether this conjecture is likely to be correct or not. Two hundred pounds of earth were dried in an oven, and afterwards put into a large earthen vessel; the earth was then moistened with rain water, and a willow tree, weighing five pounds, was planted therein. During the space of five years, the earth was carefully watered with rain water or pure water. The willow grew and flourished, and to prevent the earth being mixed with fresh earth being blown upon it by the winds, it was covered with a metal plate full of very minute holes, which would exclude every thing but air from getting access to the earth below it. After growing in the earth for five years, the tree was removed, and on being weighed, was found to have gained one hundred and sixty-four pounds. And this estimate did not include the weight of the leaves or dead branches which in five years fell from the tree.

Now came the application of the test. Was all this obtained from the earth? It had not sensibly diminished; but in order to make the experiment conclu-

sive, it was again dried in an oven and put in the balance. Astonishing was the result—the earth weighed only *two ounces* less than it did when the willow was first planted in it! yet the tree had gained *one hundred and sixty-four pounds*. Manifestly, then, the wood thus gained in that space of time was *not* obtained from the earth; we are therefore compelled to repeat our question, “Where does the wood come from?” We are left with only two alternatives: the water with which it was refreshed, or the air in which it lived. It can be clearly shown that it was not due to the water; we are, consequently, unable to resist the perplexing and wonderful conclusion, it was derived from the *air*.

Can it be? Were those great ocean spaces of wood, which are as old as man's introduction into Eden, and wave in their vast and solitary luxuriance over the fertile hills and plains of South America, were all these obtained from the thin air? Were the particles which unite to form our battle-ships ever borne the world about, not only on wings of air, but actually as air themselves? Was the firm table on which I write, the chair on which I rest, the solid floor on which I dwell, once in a form which I could not as much as lay my finger on, or grasp in my hand? Wonderful truth! all this is air.

STEAM LOCOMOTION UPON PLANK-ROADS.

To the Editors of the Plough, the Loom, and the Anvil:

IN Canada, plank-roads have been laid to a considerable extent; but, owing to the rapid destruction of them by horses' feet, strong doubts of their economy have arisen; and in some places the planks have been removed, and broken stone laid in their place. We have heard also that around Utica, in this State, the wear is such as to cause similar doubts. While the wheel tracks remain nearly in their original state, the horse tracks are cut through; and it is believed that if the rapid wear by the hoofs of horses could be avoided, the planks would last three or four times as long.

A remedy for this evil has been long ago devised, and is now proposed to those interested in the success of plank-roads. It is the steam carriage.

We have elsewhere noticed the prospectus of the American Steam Carriage Company. In this article we propose to consider the adaptation of steam carriages and plank-roads to each other; and the question whether this adaptation may not enable them to work materially in favor of each other, as locomotives and railroads have done.

The carriage of the American Company may be described as follows: A passenger carriage will carry about thirty persons, or as many as can be borne upon four wheels, with the machinery, without injury to the road. The boiler is placed behind, and the engines outside. Immediately in front of the hind or driving axle is a space of about five feet in length, between the engines, in which the luggage will be stowed. In front of this is the main body of the vehicle, with seats like an omnibus. The entrance is in front. The steering wheels are attached to the body by two springs, one above the other, by means of an upright spindle, through which the axle passes, and in which it works by a joint that admits of the required motions. The steersman sits in front, and by means of a lever, aided by a neat and simple application of the screw, turns the wheels as occasion may require. At his right hand is a lever by which he controls the steam, so as to run forwards or backwards, fast or slow; and also to stop suddenly, or to check the speed when descending hills. No breaks are used, the steam itself being directed at pleasure either in favor

of or against the forward motion; and this arrangement renders it practicable to dispense with the breakman, who was required on the English steam carriages. The fire is fed from a hopper or reservoir of fuel in the upper part of the furnace, and the supply of water to the boiler, and air to the fire, are regulated by the machinery; so that no attention is required except at the places for replenishing with water and fuel. As in the case of some English carriages, such provision is also made that no smoke or steam will be visible, and no puffing heard.

In the winter the carriage will be kept warm by the steam that has performed its function in the engines; and the air to supply the fire will be drawn from the interior of the carriage, so that an ample ventilation will be maintained—a comfort not enjoyed in common coaches, and but poorly provided for in railroad cars.

If it be required for the preservation of the road, and to secure a smooth and silent motion, the wheels will have tires of India-rubber. It is said that these tires wear about twice as long as iron, and cost about three times as much. As they are not so heavy as iron, and as they preserve the carriage from the shocks caused by inequalities in the road, and therefore allow of lighter construction, it is thought that the total expense may not be much more than that of iron tires; and the tolls would probably be so far lessened, on account of the benefit to the roads, that this material will be desirable. And it is obvious that passengers would give a preference to vehicles provided with noiseless tires.

Such a vehicle would obviously work upon a plank-road with far less injury than is produced by iron tires, with nail-heads in many cases projecting a quarter of an inch; and the wear of horses' feet, which is the principal part of all the deterioration, would be entirely got rid of.

As to the cost of motive power, it may be judged of by comparison with railroads. Locomotives and cars are made more than thrice as long as road carriages; and the power required, for equal weights, is about three times as much upon a smooth and clean plank-road as upon a railroad; hence we may conclude that about three times as much fuel would be required. A quarter of a pound per ton per mile, for the gross load, is the amount stated to have been consumed in some experiments in England in 1840, and we presume that there have been considerable improvements since that time; but we will assume that three quarters of a pound, or, allowing that there will not always be a full load, we will assume that a pound per mile will be the average consumption for every ton. The passengers will constitute four tenths of a full load, or nine hundred pounds for each ton. Allowing passengers with their luggage to average one hundred and fifty pounds each, we shall have one sixth of a pound of fuel per mile per passenger. For country roads anthracite coal will be the fuel, the cost of which, at six dollars per ton, would make the cost of fuel less than half a mill per mile. Add as much for oil, making it one mill per mile; and we find that the mere materials consumed cost so little as to compare very advantageously with horse power, even at a slow rate of travelling; and it will be much cheaper than horses can work at a quick rate.

It is believed that the machinery of a vehicle to carry as many as four horses can draw at a quick pace will cost less than a thousand dollars. To run such a stage one hundred miles per day, at an average speed of seven and a half miles per hour, requires, according to the English rules, one hundred horses. The American practice requires fewer horses; but the animals are soon worn out. Putting the number at one half, and the price at eighty dollars per horse, we have four thousand dollars as the capital to be invested in horses

for such a route. As to the number of steam carriages that must be kept, in order that one may be constantly running, it is believed that if three are kept, two of them may be upon the road twenty-three hours per day; one hour being all that is required for cleaning.

The speed is an all-important element in travelling. Tavern expenses are diminished by it, and valuable time is saved. Upon plank-roads, horses may possibly maintain an average speed of ten miles per hour; but such horses will cost more than the above rates. Steam carriages upon the same roads, even if built upon the heavy plans of the English, can maintain twice the speed: hence the tavern expenses will be lessened one half, and the loss of time in the same ratio. Putting each at the average of a dollar per day, we have one cent per mile saved by the increase of speed. Now we have seen, within a few months, an account of a new steam carriage got up in England, whose proprietors calculate that they can make a profit by carrying passengers at a farthing per mile—less than half a cent—upon Macadam roads. In fact, it is not improbable that the mere saving of time and way expenses will be more than the total cost of travelling by steam carriages upon good plank-roads. And such roads will pay a profit long before railroads will pay the current expenses of working; and will always increase the travel, so that rails may profitably supersede planks much sooner than they could pay, if the plank-road had not led the way. B.

VALUE OF CARROTS.

VERY few persons are aware of the fact, that young carrots are among the most wholesome of vegetables, and greatly assist digestion. French cooks, in many of their stewed dishes, introduce small slices of young carrots, and the *Julienne* soup, so common on every French table, is seasoned with finely-chopped vegetables—young carrots being the most important; and the difference in digestion between a dinner eaten at a French *café* and an English hotel is not alone in the cooking, but in the vegetable condiments introduced. It is only lately that the chemists have explained the digestive stimulus, known to exist in the carrot, to consist in a peculiar acid (*pectic acid*) found in this vegetable. After saying so much, with a view to the promotion of a better understanding with the carrot in our kitchen gardens, we quote the following, in corroboration, from the *Working Farmer*, calculated to increase the field cultivation of this useful vegetable: "Two bushels of oats, and one of carrots, is better food for a horse than three bushels of oats; and when used for light work, the quantity of carrots may be increased.

"With such food, horses will enjoy good health and spirits, a loose hide, shining coat, and improved digestion. It may be thus explained: the carrot is very nutritious, and, in addition, has the curious property of gelatinizing the watery solutions contained in the stomach of the horse. Carrots contain *pectic acid*, a single drop of which, mixed with the juice of an orange or other fruit, immediately turns it into a jelly; and the Paris confectioners use it for this purpose. Soups in which carrots have been boiled are always gelatinous when cold, and are more easily digested, when used as food, than soups otherwise made.

"The bene plant has similar properties. A thin slice of this plant, thrown into a glass of water, renders it ropy and gelatinous, and for this reason, it is a specific for summer complaint with children.

"By examining the dung of a horse, fed in part on carrots, it will be found

to contain no undigested hay or oats; and therefore less quantities of those materials are necessary than when half the amount swallowed is parted with in an undigested state. For fattening animals the carrot is equally valuable, and for milch cows they surpass any other food. The milk of a cow at mid-winter, fed on carrots, is equal in flavor to that supplied from clover in summer, while the butter made from the milk is finely colored and highly flavored.

"In soils containing proper proportions of bone dust, sulphuric acid, potash, and common salt, eight hundred bushels of long orange, or one thousand one hundred bushels of white Belgian carrots, may be easily raised per acre, while the same land will not produce one tenth the quantity of oats. We have sold our crop of carrots this year to the livery stable keepers of Newark, at fifty cents per bushel, and we could have sold a thousand bushels or more at the same price."—*Physo-Medical and Surgical Journal*.

FLAX COTTON.

THE *Germantown Telegraph* has the following paragraph in reference to the effect of the preparation of flax cotton, as furnishing material for improving land. It is worthy of consideration:—

"It is believed that the raising of flax must shortly become an important item of production with our farmers; and in an article descriptive of the manner and style of manufacture of flax cotton, it is stated that the crop will not only yield a heavy profit per acre, but that, instead of flax being a great exhauster of the soil, with which it has been generally charged under the old process of rotting, &c., by which the nutritive properties, being almost exclusively contained in the woody part, the resinous matter and the seed, were utterly destroyed, and nothing was returned to the soil, it is shown by the new process that all these are saved and restored, except only about two parts in the one hundred of mineral substances, absorbed by the fibre."

SCHEDULE OF PREMIUMS

Offered by the Philadelphia Society for Promoting Agriculture for Crops, the growth of 1852, viz.:

For the best field of Wheat, not less than 3 acres,	- - - -	\$15
For the best field of Rye, not less than 3 acres,	- - - -	12
For the best field of Oats, not less than 3 acres,	- - - -	10
For the best field of Corn, not less than 3 acres,	- - - -	15
For the best field of Potatoes, not less than 1 acre,	- - - -	15
For the best lot of Sugar Beets, not less than $\frac{1}{2}$ acre,	- - - -	10
For the best lot of Ruta Baga, not less than $\frac{1}{2}$ acre,	- - - -	10
For the best lot of Carrots, not less than $\frac{1}{4}$ acre,	- - - -	10
For the best lot of Parsnips, not less than $\frac{1}{4}$ acre,	- - - -	10
For the best lot of Flat Turnips, not less than $\frac{1}{2}$ acre,	- - - -	8
For the best specimen of Flax Cotton, not less than 100 pounds, produced in this State,	- - - - -	25
For the best $\frac{1}{2}$ acre of Flax, raised in this State,	- - - -	12
For the second best crops of the above, a premium of one half of the above named sums will be awarded.		

DIVERSITY OF LABOR IMPORTANT.

IN an address delivered before the State Agricultural Society at Rochester, some years since, Mr. Webster directed attention to the essential difference between the agriculture of *the North* and that of *the South*, and of the much greater exposure of the latter to injury from fluctuations of price and other casualties. A Northern and Western farmer raises half a dozen kinds of grain—wheat, oats, maize, grass, &c., &c. A fall in the price of any one of his staples inflicts upon his year's labor only partial loss, and may even enhance the returns he will receive from other articles. His wheat crop may be ruined, and if the calamity be general, all his other grains will rise in price. Or if there is a superabundance of wheat in market, the diminution in its value will but partially affect his income. But the Southern farmer raises only a single crop. He depends upon *cotton* exclusively; and if that fails, or its price falls, he has no other resources to fall back upon. His whole income is affected, while his wants and the necessity of money to supply them are none the less. He must still send to the Northern States or to England for his manufactured goods, and to the West for his pork and grain.

It would seem to be plainly enough, therefore, the true policy of the South to *diversify* its labor—to provide new branches of productive industry, instead of directing all its energies into a single channel. If Southern farmers would devote a portion of their plantations to raising other crops than cotton, and if the Southern people generally would seek more earnestly the introduction of manufactures, they would greatly promote their essential independence and prosperity. In various parts of the Southern States, manufacturing establishments have been organized, and a good deal of capital has been invested in them. To what degree these efforts have proved successful, we have not the means of forming an accurate judgment. In many localities, however, they seem to have been undertaken rather for the sole purpose of putting slave labor to a more profitable use than planting, than with any enlarged views as to their bearing upon the permanent development of Southern resources; and it would not be strange, therefore, if they should have proved less successful than had been anticipated. But the South will ultimately find it necessary to enter in earnest upon a thorough revision of its industrial pursuits; and with that will also come larger and juster views of the relations of labor.—*New-York Daily Times*.

CHANGES IN PLANTS PRODUCED BY CULTIVATION.

THE entire appearance of many plants is changed by modifying their treatment. Every one, almost, is aware that the color of the *Hydrangea* may be essentially diversified, by adopting particular modes of cultivation. Various organisms of plants are equally affected by the same means. Wood's Botany informs us, that "The cabbage, in its wild state, is a slender, branching herb, with no appearance of a head. The potato, in its native wilds of tropical America, is a rank, running vine, with scarcely a tuber upon its roots. All the rich and delicate varieties of the apple have sprung, by artificial means, from an austere forest fruit. The numerous and splendid varieties of the Dahlia are the descendants of a coarse Mexican plant, with an ordinary yellow flower, of a single circle of colored leaves."

Many of our fair readers, however, have no doubt ruined their *Dahlias*

by too high cultivation. Giving them a very rich soil and a liberal supply of water, they have secured gigantic *plants*, but mere dwarfs for *flowers*, and those of very imperfect forms and ordinary colors.

To obtain "new Tulips," of peculiar beauty, is a favorite object of pursuit among florists. New mixtures of colors are easily obtained, but to obtain desirable colors, or hues with a peculiarly beautiful arrangement, is quite another thing.

Most of our readers have known about the elegant pears at the weekly exhibitions of the Massachusetts Horticultural Society. We have seen, many times, upon their tables, large dishes of the "Duc d'Angouleme," averaging more than a pound to each pear; some specimens have gone up to one and a quarter, and even one and a half pounds each. Yet there are only two gentlemen, if we mistake not, that have often succeeded in producing the most wonderful specimens of that splendid fruit. But while the fact is so, the reason is unexplained. Others have as good ground, as skilful gardeners, and cultivate as carefully, as they. Still they do not grow *such* pears. He would get "the gold medal" who should explain the cause.

Notice, too, the *Strawberry*. How unlike are some of the newer seedlings to the fruit of the wild plant! Some three weeks since, we saw berries of *Walker's Seedling*, at the horticultural seed store, raised by Mr. Bowditch, of the city gardens, Roxbury, measuring one and a quarter inches in diameter. They (the berries) sold at a dollar a dozen. Many dozens were sold at that price.

Let not those of our farmers, who barely plough four to six inches deep, manure slightly, and hoe seldom, if ever, in a proper manner, talk about *cultivating* corn, or wheat, or parsnips, till they can show more change in their crop from its appearance when left to itself, than has been often witnessed in certain quarters hitherto.

NATIONAL AGRICULTURAL CONVENTION.

Whereas the Massachusetts Board of Agriculture, at its meeting held in Boston, January 14, 1852, requested its President to enter into correspondence with the Presidents of State and other Agricultural Associations, on the expediency of calling a NATIONAL AGRICULTURAL CONVENTION; and whereas the Pennsylvania State Agricultural Society, at its meeting in Harrisburg, on the 20th of the same month, and the Maryland State Agricultural Society, at its meeting in Baltimore, on the 4th of February, adopted similar resolutions, and recommended the formation of a National Agricultural Society; and whereas the New-York, Ohio, and other State Societies, through their Presidents or by published resolves, have expressed similar views in relation to the necessity of a closer bond of union between all such institutions throughout our country:

Therefore, the undersigned, believing from these indications that the time has arrived for a confederation of local Agricultural Societies in the United States, and in conformity with a resolution of the Pennsylvania Society, authorizing the Presidents of the three first named Associations to designate time and place, do hereby invite Delegations to meet in Convention in the City of Washington, on the twenty-fourth day of June next, at 10 o'clock A. M.

The objects of this Convention are, to organize a NATIONAL AGRICULTURAL SOCIETY, to which the various Agricultural Societies may be auxiliary; to

VOL. IV.—48.

consult together upon the general good, and to establish, by this Society, or such other means as the Convention may devise, a more cordial and widely extended intercourse between agriculturists in our own country and in other lands; to create additional facilities for the acquisition and diffusion of knowledge, by books, journals, seeds, and other objects of interest to the American farmer and gardener; and to act on such other matters pertaining to the advancement of agriculture as the wisdom of the Convention may judge appropriate.

For these purposes, the undersigned earnestly solicit delegations from the various State, or other organizations, for the promotion of agriculture in the several States and Territories; and where such organizations do not exist, delegations from such districts, consisting in all cases of such number of persons as it may be deemed expedient to appoint.

As it has been considered desirable to name an earlier day for this Convention than was at first expected, this circular is issued before the concurrence of several of the State Agricultural Societies could be obtained. Their respective Presidents are therefore requested to add their names to this call, and to give immediate publicity to the same through the papers and periodicals of the day.

A large and general attendance is confidently anticipated.

Societies will please transmit at an early date a list of the delegates they have appointed, to Daniel Lee, M. D., Agricultural Department, Patent Office, Washington.

MARSHALL P. WILDER,	President	Mass.	Board of Agr.
FREDERICK WATTS,	"	Penn.	State Agr. Soc.
CHAS. B. CALVERT,	"	Md.	" " "
HENRY WAGER,	"	N. Y.	" " "
THOMAS STOCKS,	"	South.	Cen. Agr. Soc.
ARTHUR WATTS,	"	Ohio	State Board of Agr.
JAMES TALLMADGE,	"	Am.	Institute, N. Y.
JOHN C. GRAY,	"	Mass.	Soc. Prom. Agr.
JOSEPH A. WRIGHT,	"	Ind.	State Agr. Soc.
GEO. W. NESMITH,	"	N. H.	" " "
FREDERICK HOLBROOK,	"	Vt.	" " "
JOSIAH CHAPIN,	"	R. I.	Society for the Encouragement of Domestic Industry.

May 20, 1852.

[We cheerfully give place to this circular, and entreat for it a general and serious consideration. The gentlemen who are prominent in this matter do not often commence a project to abandon it, nor to carry it on in an inefficient manner. This will, of course, be a meeting for consultation, and may terminate in no definite action. But we hope for and expect a different result.—Eds.]

GREEN-HOUSE.—Air fully, except in the more tender part of the house; remove camellias which have done flowering into the warmer situations; insert cuttings of the various plants; give fresh earth and liquid manure when required; shade flowering shrubs and plant cuttings of geraniums; head down and prune irregularly growing shrubs; remove decayed leaves and wash foliage; make layers of shrubs; propagate myrtles by cuttings; give liquid manures to oranges and lemons in bloom, and thin blossoms when in clusters; transplant seedlings, and shift into larger pots if necessary.—*Working Farmer.*

METHOD OF CURING PRIZE HAMS.

THE *American Farmer* contains the following recipes. It was by these the curing was done upon the prize hams at the last exhibition of the Maryland State Agricultural Society.

T. E. HAMILTON'S RECIPE.—First Premium.—To every 100 lbs. of pork take 8lbs. of G. A. salt, 2 oz. saltpetre, 2 lbs. brown sugar, $1\frac{1}{4}$ oz. potash, and four gallons of water. Mix the above, and pour the brine over the meat, after it has lain in the tub for some two days. Let the hams remain six weeks in the brine, and then dry several days before smoking. I have generally had the meat rubbed with fine salt, when it is packed down. The meat should be perfectly cool before packing.

J. GREEN'S RECIPE.—Second Premium.—To every 1000 lbs. of pork, take half a bushel and half a peck of salt, 3 lbs. of saltpetre, 3 lbs. of sugar, and 2 quarts of molasses. Mix—rub the bacon with it well; keep on for three weeks in all; at the end of nine days take out the hams, and put those which are at the top at the bottom.

R. BROOKE, JR.'S, RECIPE.—Third Premium.—One bushel of fine salt, half bushel ground alum salt, one and a half pounds to a thousand pounds of pork, let it lie in pickle four weeks, hang up and smoke with hickory wood until the rind becomes a dark brown.

C. D. SINGLUFF'S RECIPE.—Fourth Premium.—To 100 lbs. of green hams, take 8 lbs. G.A. salt, 2 lbs. brown sugar or molasses equivalent, 2 oz. saltpetre, 2 oz. pearl ashes, 4 gallons water, dissolved well, skimming off the scum rising on the surface. Pack the hams compactly in a tight vessel or cask, rubbing the fleshy part with fine salt. In a day or two pour the above pickle over the meat, taking care to keep it covered with pickle. In four to six weeks, according to the size and weight of the hams, (that is to say, the longer period for heavy hams,) hang up to smoke, lock up, smoking with hickory wood. I have put up hams for the last 12 or 15 years by the above recipe, with uniform success, equal at all times to the sample now presented.

METHOD OF TRANSPORTING TREES, &c.

TREES from the nursery may be sent to very long distances without deterioration in quality, by filling the cloths surrounding their roots with *pulverized charcoal*. Indeed, the whole plant may be imbedded in charcoal, and transported to such distances as would be entirely improper without such treatment. We have sent, during April, raspberries, currants, and other plants, to St. Louis, Missouri, via New-Orleans, prepared in this way; we have no doubt of their safe arrival. Cold-frame, cabbage plants, and others, may be sent in baskets, barrels, &c., by dusting pulverized charcoal liberally among them. R. L. Pell, Esq., imported a few years since from Italy a large number of trees. Half the number was packed in charcoal dust, and half packed as advised by the Italian nursery-man. On arrival here those packed in charcoal dust were in perfect order, while those put up in the ordinary way were dead. In sending grafts and scions, they may be surrounded by thin gutta percha, now made for the purpose. This article is as thin as writing paper, but being entirely impervious to water, is capable of retaining moisture for any length of time.—*The Working Farmer*.

NEW BOOKS.

Annual of Scientific Discovery; or Year Book of Facts in Science and Art, for 1852: Exhibiting the most important Discoveries and Improvements in Mechanics, Useful Arts, Natural Philosophy, Chemistry, Astronomy, Meteorology, Zoology, Botany, Mineralogy, Geology, Geography, Antiquities, &c.; together with a List of recent Scientific Publications; a Classified List of Patents; Obituaries of eminent Scientific Men; Notes on the Progress of Science during the year 1851, &c., &c. Edited by DAVID WELLS, A.M. 12mo, pp. 408. Boston: Gould & Lincoln, 59 Washington street. 1852.

Having had the pleasure of reviewing with much favor and satisfaction the two previous volumes of this work, we are gratified to find the present replete with equal or even greater interest than its predecessors. As heretofore, the editor, in its preparation, has selected from the great mass of valuable and interesting facts of the preceding year a great variety of subjects deeply important to every inquiring mind, illustrating the progress of natural and physical science in all their various departments. Each volume is a connecting link in the continuous chain of recorded events, forming a progressive series embracing as nearly as possible a complete scientific history from the time of its first commencement to the current date. Under the able and judicious management of its excellent editor, and in the hands of the present indefatigable publishers, it bids fair to rival older and more expensive publications, and become a text-book for the student in historical science. The "Notes" by the editor relating to the progress of science in 1851 contain a condensed and graphic account of the researches, discoveries, inventions, and progressive history of literature, science, and the useful arts during the past year, and embody in a brief space a widely comprehensive view of all these in their extensively varied departments. As a work of interest, information, and frequent reference, for the student, the naturalist, the inquirer after scientific truth in all its phases, or the inventive mechanic, artisan, and agriculturist, we can highly recommend the "Year-Book of Facts" as an interesting, convenient, and valuable work.

A Practical Treatise on the Cultivation of the Grape Vine on Open Walls. With a Descriptive Account of an Improved Method of Planting and Managing the Roots of Grape Vines. By CLEMENT HOARE. To which is added an Appendix, containing Remarks on the Culture of the Grape Vine in the United States. 18mo, pp. 210. New-York: C. M. Saxton, 152 Fulton street. 1852.

The republication of this excellent work on the Vine, in an improved style, is both opportune and praiseworthy, inasmuch as no treatise on the subject is more full or better adapted to the general culture of the Grape in all respects than this. It is simply arranged, and the practical application of the methods recommended, easy. We know of no cheap treatise on the culture of the Grape that is better calculated to be of general utility, and can recommend "Hoare on the Vine" to all who are engaged in the culture of this delicious and healthy fruit. A few shillings expended for a work like this will often, if consulted, prove of incalculable value to its possessor.

The Practical Model Calculator; for the Engineer, Mechanic, Machinist, Manufacturer of Engine Works, Naval Architect, Miner, and Millwright. By OLIVER BYRNE, Civil, Military, and Mechanical Engineer. 1 vol. 8vo, pp. 592. Philadelphia: Henry Carey Baird, (successor to E. L. Carey.) 1852.

This is one of the most useful and comprehensive works of the kind that has recently been published. It introduces full tables of Weights and Measures, Time, Notation, Numeration, and Arithmetical Problems; Extraction of Roots, Mensuration of Surfaces, Decimal Approximations, Tables of Circumferences, Squares, Cubes, and Areas of Circles; Reciprocals of Numbers, Mensuration of Solids, Timber, Spheres, &c.; Cuttings and Embankments; Tables of Squares, Cubes, and their Roots; Powers of Numbers; Logarithms; the Steam-Engine; Strength of Materials; Hydraulics, Water-Wheels; the Application of Logarithms; Trigonometry, Heights and Distances; Spherical Trigonometry, Measurement of Angles; Weight, Specific Gravity, Mechanical Powers, Continuous Circular Motion; Velocity of Wheels; Pumps and Pumping-Engines; Centripetal

and Centrifugal Force; Naval Architecture; full Tables of Logarithms of Numbers, Logarithmic Sines, &c., &c. These are all fully and understandingly treated; and a great variety of elaborate and comprehensive tables introduced and arranged in systematic order. The Steam-Engine in all its departments is treated at length, and with much ability; and under the head of Specific Gravity, we have some of the most useful tables which have been published. For the mechanic, machinist, ship-builder, engineer, and manufacturer of engine work, the "Model Calculator" will prove an invaluable companion.

The Indian Tribes of Guiana. By Rev. W. H. BRETT. 1 vol. 16mo, pp. 352. New-York: Robert Carter & Brothers, No. 285 Broadway. 1852.

This is one of the great variety of excellent works which the Brothers Carter are constantly presenting to the reading public. As its title purports, it is a well-written and somewhat graphic history of the Indian tribes of the north-eastern part of South America. It was originally written at the request of the Rev. Ernest Hawkins, B.D., Secretary to the Society for the Propagation of the Gospel in Foreign Parts, and very appropriately dedicated to him. The author having been the first of the Society's missionaries exclusively engaged in the work of the conversion of the Indians in that country, describes things that he has "heard, seen, or experienced;" together with such additional information as may give a general idea of the progress of the gospel in that part of the world.

The Rev. author has described, with much interest to the reader, the appearance, habits, and customs of the Indians and other races of the country, and the nature of that portion of it which they inhabit; and the work contains many fine illustrations, exhibiting its productions and the scenery, costume, weapons, &c., &c., of the natives. It is published in neat and beautiful style, and will form a very acceptable and interesting volume to the general reader.

Hungary in 1851; with an Experience of the Austrian Police. By CHARLES LORING BRACE. 12mo, pp. 420. New-York: Charles Scribner, 145 Nassau street. 1852.

To those who best know the author of this unpretending but interesting volume, nothing will be required from us to recommend the work. In his recent journey through Hungary, Mr. Brace had unusual advantages for observing thoroughly the condition and feelings of the Hungarian people. Mingling much in their social life, and closely familiarizing himself with their history, habits, and associations, his experiences, as detailed in the above volume, are the more valuable from the fact that he has given *Hungary as it is in the mass*, instead of a mere superficial glance over its surface. His feelings and sympathies are certainly with that heroic but unfortunate people; and we honor the kindly sentiments which he openly avows for a nation "practically educated for freedom, passionately loving it, and ready to peril all to gain it."

The author gives *facts* rather than opinions; and his object appears to have been to subserve the cause of truth and justice rather than *party*, although we cannot suppose that a thirty days' incarceration in an Austrian dungeon, on a mere trifling pretext, with other indignities by the minions of a despotic government, would be calculated to produce feelings of the kindest nature towards that government or its subjects. It is a well-written, agreeable, and interesting book, affording instruction on almost every topic relating to the present condition of Hungary, and admirably adapted to the present general feeling of interest manifested by the public on this subject. It is neatly embellished with maps and engravings, illustrative of its contents.

The Culture of the Grape, and Wine Making. By ROBERT BUCHANAN. With an Appendix containing Directions for the Culture of the Strawberry. By N. LONGWORTH. 12mo, pp. 142. Cincinnati: Moore & Anderson, 28 West Fourth street. New-York: C. M. Saxton, 152 Fulton street. 1852.

The above is the title of a well-arranged and useful compilation by Mr. Buchanan, principally relating to the culture of the vine and wine making in the United States. Both of them are subjects of much importance and increasing interest, and every publication affording additional information in regard to the former is of particular value to the community. The brief remarks relating to the culture of the strawberry contained in

the appendix place the subject in a familiar manner before the reader, and will perhaps give him some new light on the subject.

Chambers' Pocket Miscellany. Boston: Gould & Lincoln, 59 Washington street.

The public will be gratified to learn that Messrs. Gould & Lincoln have commenced a cheap issue of this popular work by the Messrs. Chambers, from the early sheets of the Edinburgh edition, in monthly parts or volumes of one hundred and eighty pages, at the low price of twenty cents per volume, each of which will be complete in itself. It will consist partly of amusing articles from the early quarto volumes of "*Chambers' Edinburgh Journal*," a work now entirely out of print and unknown to most of the readers of the present generation; and partly of articles of a similar character for which space cannot be found in the current numbers of that journal. This cheap, convenient, and instructive series cannot fail to be decidedly popular with the reading public, and as a travelling attendant or literary companion will be regarded as both valuable and entertaining.

A Month at Constantinople. By ALBERT SMITH. Illustrated with forty-five wood engravings. Being Parts IV. and V. of Bradbury & Guild's American Miscellanies. New-York: Wm. C. Locke & Co., 135 Nassau street. 1852.

This entertaining series of "American Miscellanies" were noticed with much favor in our last number, and we are pleased to announce Parts IV. and V. in the above convenient form, comprising an interesting and instructive volume of nearly two hundred 12mo pages, neatly and appropriately embellished, and costing subscribers to this periodical only twenty-five cents. Fifty cents, in advance, will pay for four parts, or one dollar for eight parts of this work.

The New-York City Directory, 1852-3. Compiled by HENRY WILSON. 673 pp., and Appendix. New-York: John F. Trow, 49 Ann street.

We have received a copy of this new Directory from the publisher, and after a cursory examination are entirely satisfied with the amount of information which it contains and the manner in which it is executed. The typography is excellent. It is said to contain 25,000 more names than any previous publication. It contains also a map of the city. The publisher certainly deserves encouragement.

Fancies of a Whimsical Man. By the author of "Musings of an Invalid." 16mo, pp. 281. New-York: John S. Taylor, 143 Nassau street. 1852.

This is truly a whimsical book, written in a free, off-hand style; occasionally a little disjointed and rough, but true to the feeling of a good-natured and slightly eccentric individual. The admirers of Hood's inimitable productions will find much in the writer of the "Fancies" to laugh over. It is a sort of offset to the "Musings of an Invalid," recently issued by the same publisher, and promises to meet with the same general favor from the public.

The American Veterinary Journal. G. H. DADD, M.D., editor, Boston. 32 pages monthly.

Dr. Dadd thoroughly understands his profession, is a good writer, and publishes, for one dollar a year, at least one of the best veterinary works, if not the best, in the country. Every owner of a horse or cow should have this journal. A single paper may save the life of a valuable animal.

NEW MUSIC.

We are indebted to Messrs. Firth, Pond & Co., Franklin Square, this city, for the "Holy Deal," trio, words translated from Klopstock by Prof. Longfellow, and the music by Faustina Hasse Hodges; also, "Fading Flowers," words by Clarence May, music by Wm. Mason; together with "Eulalia," written by H. S. Cornwell, and composed by Stephen C. Foster; all in the publishers' neat and elegant style. They cannot fail to be extensively sought after and universally admired.

EDITORS' JOTTINGS.

TRIAL OF AGRICULTURAL MACHINES.—The New-York State Agricultural Society have appointed an able committee, who are to meet in July next, (day not fixed,) for the purpose of testing the value of various agricultural implements. The trial is to be had on the farm of Horace D. Bennett, in Geneva. The machines for which premiums are offered are: grain reapers, mowing machines, steam engines for farm purposes, gauged grain drills, horse powers, flax and hemp dressing machines, threshers, cultivators, seed planters, and broad-cast sowers. The premiums range from diploma and \$50 to diploma and \$5. This is a subject of great importance, and will no doubt bring together a large number of visitors.

A BRIDGE ACROSS THE SUSQUEHANNA.—We are pained and surprised to learn that this measure, so beneficial to the public, has been defeated in the Legislature of Maryland, from some cause which it is impossible for us to understand. An effort was made to reconsider the vote, but it failed by a very small majority. We were in Baltimore at the time the news was announced, and heard some of the expressions of regret which escaped the lips of travellers and citizens at a result so unlooked for and so astounding. The Railroad Company has been true to the interests of the public, and had the Legislature of Maryland been equally careful to promote the welfare of the travelling community, a bridge would soon have spanned the Susquehanna river at Havre de Grace, as beautiful as it would be useful and substantial. Strange, passing strange, that a Legislature could any where be found that would throw a single obstacle in the way of a measure of such great public utility! The subject is now postponed for two years, by which time it is to be hoped the State of Maryland will have a Legislature of more enlarged views, and having a livelier regard to the interests of the public than the one whose labors have just been brought to a close.

WILLOWS AND WILLOW BASKETS.—An article on this subject, recently published by our neighbors of the *Farmer and Mechanic*, has excited some interest, and has been the occasion of earnest inquiry. Nor is this strange, while we annually import a million of tons of this identical article for various forms of manufacture.

For the purpose of throwing a little more light on a subject on which we need light ourselves, we give the following description, substantially from Wood's Botany, of several

species used for manufactures of this kind, omitting those distinctive points which pass away with the flower, and would not perhaps be remembered; and we invite all skilled in this matter to inform us where these species are found in any considerable quantities, and whether they are now used for manufacturing purposes. We respectfully invite the learned author of the manual above named to give us any information he may have on this subject:

1. *SALIX VIMINALIS*.—The leaves of this species are narrow, lance-shaped, very long, sometimes nearly a foot, acuminate or pointed, silky canescent or soft downy beneath. The aments (heads of flowers) appear before the leaves. Its scales are roundish and very hairy. It grows in wet meadows, and on the margins of rivers, from ten to twelve feet in height. It is sometimes called *Basket Osier*.

2. *SALIX PETIOLARIS*.—Leaves lance-shaped, serrate (saw-toothed), smooth, scales hairy and black; a small tree, with long, slender, smooth, purplish or yellowish-green, tough and elastic branches.

3. *SALIX FUSCATA*.—Leaves broad-lance-shaped, acute, (sharp tapering point,) smooth, whitish beneath, and when young, downy. Aments of a leaden hue; scales obtuse, scarcely hairy within. It grows in pools and swamps, and on river banks, seldom exceeding three or four feet in height.

4. *SALIX RIGIDA*.—Leaves oblong, lance-shaped, acuminate, a little heart-shaped at base, rigid, smooth, coarsely toothed, leaf-stems hairy. Tree ten to fifteen feet high, in swamps. Branches green, red towards the end, the younger ones downy.

These are some of the kinds used in the arts. Perhaps there are others. At any rate, we should be glad to learn all there is to be known upon the subject, and invite our correspondents and friends to inform us where the trees grow, how much use is now made of them, the profits derived from the manufacture, &c., &c., &c.

COMMERCE.—The carriers of our produce to our neighbors across the Atlantic, our commercial friends, seem to occupy a good share of attention among foreigners at this time. Our readers are already familiar with the fame and success of our American clippers. A late London paper says that the old imperfect forms are gradually being dropped, and the mighty competition of the North American clippers, which are endeavoring to monopolize the freights of the world, and to drive England out of the field even in her own colonies, has aroused

the whole dormant energy of the English character. A competition in navigation has ensued, such as the world never before witnessed, and all nations that take any interest in the matter must exert themselves to the utmost to bear themselves bravely in so mighty a struggle, where every mean are brought into play on all sides.

CAMOMILE.—Many acres of this plant are grown round Mitcham, England, for the sake of the blooms. The mode of culture is as follows:—The ground is manured and dug or ploughed, and then harrowed; old plants are lifted, divided into tufts, and planted in rows two feet apart, and one foot six inches in the row. The best time for the operation is November, as the plants have time to make roots during the winter; by hoeing and attending to it the following spring, they soon cover the ground. The flowers are gathered in July and August. Camomile bitter is much esteemed as an excellent tonic. Clean land, the great distance the plants are apart, and never allowing them to stand more than one year, form all that can be said respecting its cultivation. The flowers are spread on canvas frames, and dried in houses prepared for the purpose, with flues running through them; never in the sun.—*J. Cuthill, Gardener's Chronicle.*

We do not see why this herb may not be cultivated with profit in this country, instead of depending almost entirely on importation for the supply of it. For this latitude, the middle of September would be the best time for planting, and in this climate, even in the shade, we think the blooms may be dried sufficiently without fire heat. Under any circumstances, no farmer's garden ought to be without a small patch of it.

APPLES.—We find a paragraph in the *Newburyport Herald*, stating that in West Newbury, a small town of Massachusetts in population, though covering considerable surface of territory, (who are also engaged in the manufacture of combs,) there were raised and put up last year, of marketable apples, *fourteen thousand and nine* barrels, worth about \$28,000.

The Newburyport Railroad has transported this spring 5,000 barrels of apples to Bradford, whence they were taken to Boston on the Boston and Maine Railroad. They were mostly taken in at the Byfield depot, and were probably the produce of West Newbury.

BLAKE'S PATENT FIRE-PROOF PAINT.—This paint after the lapse of time forms a sort of enamel, protecting whatever it covers from the weather, fire, and water. The justice of its claims to public favor is ap-

parently established on a fair footing by its analysis. Dr. Chilton finds it to be composed as follows:

Sand or silica,	-	-	-	48.15
Alumina,	-	-	-	21.00
Oxide of iron,	-	-	-	18.30

Certain spurious paints were found to contain other ingredients, as the oxide of manganese, and less alumina, and are more liable to run or wash off.

RADISHES.—Radishes require a warm or rather hot soil. The more sand there is in its composition, the finer will be the flavor of the roots, and the less likely will they be to suffer from insects and disease. It is not to be understood, however, that manure is unnecessary, unless the quality of the land is such as to insure a good growth without it. Warming and highly stimulating manures are preferable to such as are more cold and tardy in their action. The seed should be got in early, and no weeds allowed to grow in the beds, the surface of which it will be well to stir frequently in hot weather, in order that, by retaining the upper stratum finely pulverized, the soil may have the important benefit of a non-conductor to retain the heat of the fermented manure and of the soil beneath and above the roots.

PUBLIC SCHOOLS OF BOSTON.—From the Report of the Superintendent, at the close of 1851, we learn that 21,643 scholars have been taught, at the cost of \$325,913.72. The original cost of all the "public school estates" has been \$1,271,273.57. The whole cost of "tuition and incidental expenses" the last year has been \$244,933.89, or \$11.32 per scholar. The rate of increase of scholars for the last ten years has been $7\frac{1}{2}$ per cent. The proportion of the entire tax which was expended for schools is 25.7 per cent.

BOSTON, NORWICH, AND NEW-YORK LINE.—We have usually travelled upon other routes, in our visits to the City of Notions, but we have recently had experience of the facilities furnished by this line. To say that the boats are good, officers, conductors, &c., attentive and obliging, and the route very pleasant, is really to say no more than the strictest truth requires. It is one of the routes between this city and the East.

FERTILIZERS.—Refuse leather, cut into small pieces, and, after being strewn over the ground, ploughed in, is very nutritive to plants. Its decomposition is so gradual, that its effects will continue for several years. It may be used at the rate of 20 or 30 bushels per acre. It is particularly serviceable on gravelly or sandy soils.

TOPICS OF THE PRESS.

POTATOES AND TOMATOES.—It is not so generally known as it deserves to be that the tomato, when grown among corn, is far superior in flavor to those produced in the common way. They must, of course, have a fair chance of room to grow, and not be too much crowded by the corn. Those who can appreciate the good qualities of this vegetable when in perfection, will find this mode of growing them to secure all they can ask; at least such has been my experience.

It has been maintained by some respectable experimenters, that potatoes planted among corn are not so liable to rot; and this opinion has been confirmed by a sufficient number of trials to render it worthy of attention.—*Working Farmer.*

A REMARKABLE COW.—The report of the committee on cows to the Windsor county (Vt.) Agricultural Society, gives the following facts relative to a cow belonging to John L. Lovering, of Hartford in that county. She is ten years old, and has been subjected to repeated trials in different years, as to the quantity of milk and butter yielded. During ten days early in the past summer, she gave 516 lbs. of milk, ranging from 51 to 53 lbs. per day. The milk of the last four days was made into butter, and, after thorough working, weighed 10 lbs. 5 oz., or 13 lbs. per week. This experiment was very carefully made by a disinterested person, under the special direction of the committee. Similar experiments were made in previous years, with very nearly the same results. The owner states that this cow has no pedigree, but he intends that her descendants shall have, some of which are young animals of great promise.

MYSTERY OF THE AMERICAN LAKES.—Lake Erie is only 60 or 70 feet deep, but the bottom of Lake Ontario, which is 452 feet deep, is 230 feet below the tide-level of the ocean, or as low as most parts of the Gulf of St. Lawrence; and the bottoms of Lakes Huron, Michigan, and Superior, although their surface is so much higher, are all from their vast depth, on a level with the bottom of Lake Ontario. Now, as the discharge through the river Detroit, after allowing for the full probable portion carried off by evaporation, does not appear by any means equal to the quantity of water which the three upper great lakes receive, it has been conjectured that a subterranean river may run from Lake Superior to Huron, and from Huron to Lake Ontario. This conjecture is by no means improbable, and accounts for

the singular fact, that salmon and herring are caught in all the lakes communicating with the St. Lawrence, but in no others. As the Falls of Niagara must have always existed, it would puzzle the naturalists to say how these fish got into the upper lakes without some such subterranean river; moreover, any periodical obstruction of this river would furnish a not improbable solution of the mysterious flux and reflux of the lakes.—*Welland Advocate, (C. W.)*

LOOKING-GLASSES FOR BIRDS.—A correspondent of the *Gardener's Chronicle* says: "The following plan is perfectly efficacious for scaring birds from fruit and other produce. One of my servants having by chance broken a looking-glass, it occurred to me that the broken pieces, suspended by a string, so as to turn freely in every direction, would give the appearance of something moving about, which would alarm the birds. I accordingly tried the plan, and found that no bird, not even the most foolhardy of them, dare come near. They had attacked my peas; on suspending a few bits of the looking-glass among them, the marauders left the place. The tomtits attacked my seckle pears, to which they seemed very partial. A bit of looking-glass suspended in front of the tree put a stop to the mischief. My grapes were then much damaged before they were ripe by thrushes and starlings; a piece of looking-glass drove these away, and not a grape was touched afterwards. I had before tried many plans, but never found any so effectual as the above."

POULTRY.—A correspondent of the *Massachusetts Ploughman* makes the following statement in regard to the profits of poultry: "I made a trial of mine the past year, ending March 1, 1852. I commenced with 15 hens and a protector. I raised 265 chickens, which I sent to Boston market, excepting 30 of the pullets which I kept through the winter. My hens laid, from the first of March to the first of October, 804 eggs; from October to the first of March, 1,284. Total, 2,088.

Whole amount sold from hens,.....	\$142 37
30 hens at 62½ cts.,.....	18 75
One cord of manure,.....	4 00

\$165 12

Cost of keeping,.....	93 61
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Net gain,.....	\$71 51
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"My hens are a cross of the Cochin China and our native breed. I will give you my method of keeping. I feed my hens once

a day with dough made from corn and cob-meal, mixed with boiling hot water, and once a day I give them outs. I give them some kind of animal food three or four times a week. Also keep something constantly before them for making the shell."

IMPROVED HORSE COLLAR.—Mr. P. F. Hicks, of Bristol, Ontario county, N. Y., has taken measures to secure a patent for an improvement in breast collars for horses, which consists in making the collar of such a form that the shoulder blades of the animal are allowed free and expanded action when going fast or drawing heavy loads. The collar is an elastic one, with the lower part forming a loop, and the upper ends bent over at right angles with the sides of the bow. It is well known that the common stuffed collar has a kind of choking effect when a horse is drawing a heavy draft, and for this reason many have preferred the Dutch harness, which had no collar. This collar obviates that evil, and presents all the advantages of a stuffed one.—*Scientific American*.

CURE FOR POISON.—Samuel Gardner, a correspondent of the *Massachusetts Ploughman*, writes as follows: "I saw a statement in your paper last spring, recommending spirits turpentine for the cure of poison. No doubt this may be very good. I poison easily by ivy or mercury. I take potato leaves, rub them in the hand to start the juice, and apply them to the itching part. The raw potato scraped I have used with success, when slightly affected, in the fall. I was informed that the potato leaf cured a person who had tried, he said, almost every thing."

INDUSTRY OF BOSTON.—Within the limits of the city, in 1850, were 8 distilleries, 3 breweries, 1726 warehouses and stores, 4 rope-walks, 3 steam grist-mills, 4 steam saw-mills, 2 steam flour-mills, 28 iron-works, furnaces, and machine-shops, 13 oil-factories, 5 glass-factories. There were also 4398 horses.

The entire valuation of the city was \$213,310,067.

LICE ON FOWLS.—These nuisances may be kept away by washing the poultry house with a strong solution of red cedar boughs. So says the authority above named. The same journal also contains the following:

WHY SMOKING PRESERVES MEAT.—Hams are preserved by smoking them over a wood fire, because wood smoke emits a quantity of creosote, which is a great preservative of meat and all animal substances. Creosote is an extract from the oil of tar, and derives

its name from this peculiar quality. It is formed of two Greek words, *kreas*, flesh, *soto*, I save.—*Ger. Telegraph*.

A DREDGING MACHINE is in use at the Washington Navy Yard, which is operated by two men, and can bring up, from a depth of thirty feet, one cubic yard per minute, which is discharged into a scow alongside.

TO KEEP BUGS FROM VINES, a spoiled clam, the cleanings of a wool-carding machine, or a lock of wool soaked in fresh oil, placed near the root of the vine, will be sufficient.

RECIPES FOR THE SEASON.—We publish below a few excellent recipes adapted to the season, taken mostly from Mon. Soyer's new work, *The Modern Housewife*.

ASPARAGUS.—Take a bundle and lightly scrape the white part, beginning from the head down, and throw them when done into cold water, then tie them up in bundles of twenty-five each, if an ordinary size; if very large, half that number, keeping the heads together, and putting those of the same length in the same bundle; throw the bundles into boiling water, add a little salt, and boil briskly fifteen minutes, or till tender; have a layer of dry toast on your plate, lay the bundles on with the heads at the centre, and carefully cut the strings; let the longest bundles form the lowest layer, thus dressing it in the form of a pyramid. Serve very hot, with cream or butter sauce poured over it.

RHUBARB PIE.—Strip the skin off the tender stalks of rhubarb, and slice them thin. Put it in deep plates lined with pie crust, with a thick layer of sugar to each layer of rhubarb. A little grated lemon peel may be added. Place over the top a thick crust; press it tight round the edge of the plate, and perforate it with a fork, that the crust may not burst while baking, and let the juice of the pie escape. Bake about one hour in a slow oven. Rhubarb pie must not be quick baked. Some stew rhubarb before making it into pies, but it is best without stewing.

BAKED EGGS WITH ASPARAGUS.—Cut twenty heads of asparagus into small pieces, boil them fifteen minutes, put them into a stew-pan with half an ounce of butter, set them on the fire for three minutes, season with a little pepper, salt, and sugar; when done, put them in the dish you wish to serve them in, break six eggs carefully over, sprinkle salt and pepper over, and put the dish in the oven till the eggs are set.

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P 72
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